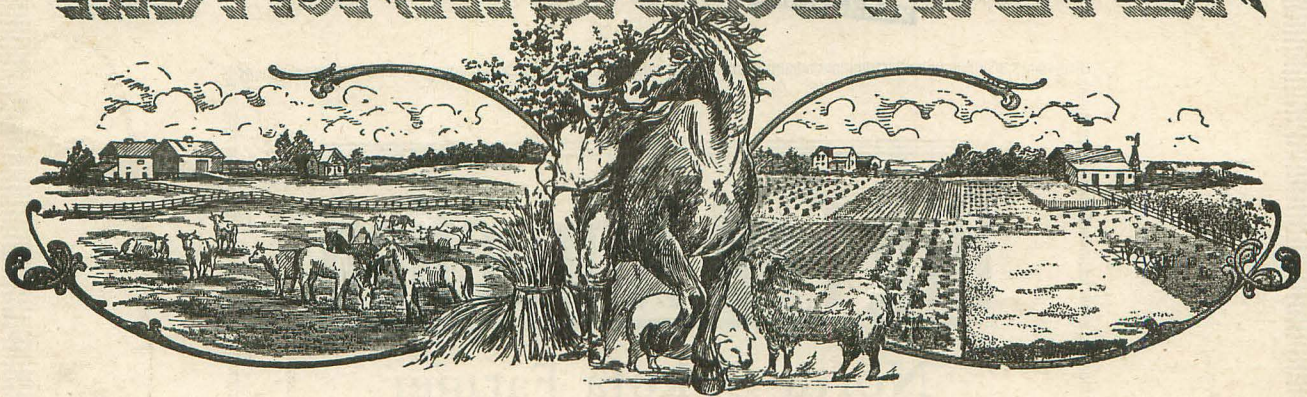


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THE NORTH DAKOTA FARMER



"THE NORTH DAKOTA FARMER FOR NORTH DAKOTA FARMERS"

Vol. 15 No. 5

Lisbon, North Dakota, November 15, 1913

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North Dakota Farmer, Lisbon

THE NORTH DAKOTA FARMER

Vol. 15, No. 5

LISBON N. D., NOVEMBER 15, 1913

50 Cents a Year

The Organization of American Agriculture

By David F. Houston, Secretary of Agriculture

David F. Houston, Secretary of Agriculture, on November 14th spoke on "The Organization of American Agriculture" before the 47th annual session of the National Grange of Patrons of Husbandry, at Manchester, New Hampshire. In his introduction Secretary Houston stated that it was time that all intelligent people put their heads together to consider rural conditions, which presented not a class problem but a national problem affecting city and rural populations alike. Following is an abstract of his address:

A question frequently asked in Washington of those connected with agriculture is whether we have reached the limit of our supply of the necessities of life and whether or not anything can be done to decrease the cost of living. I have systematically refused to deal offhand, with this vastly important problem, as so many of the interviewers expect. It is one of vast importance and complexity. There are many avenues of approach to it; many controlling factors and no simple remedy. But I am not one of the pessimists. I do not entertain the thought for a second that we have approximated the limit of our output from the soil. As a matter of fact, we have just begun to attack the problem. We have not even reached the end of the pioneering stage and have only in a very few localities developed conditions where maximum returns may be secured. But we have unmistakably reached the period work. We can no longer rely on the bounty of nature. There are evidences that Providence is ceasing its protective supervision of fools and Americans. Conditions are emerging which if not fundamentally dealt with will lead us into serious embarrassments. It is well for us to face the facts and get our bearings.

Less than 12% of Land Yielding Maximum Returns

With a population of less than ninety-five millions of people living on

more than three millions of square miles, it is ridiculous to speak as if our territory had been more than pioneered. The population per square mile in the Union does not exceed thirty-one, and ranges from seventenths of one per cent in Nevada to five hundred and eight in Rhode Island.

According to the best statistics available it appears that the total arable land in the Union is approximately 935 million acres; that only about 400 millions of this is included in farms and improved; that over 100 millions is unimproved and not included in farms; and the remainder is unimproved lands included in farms. According to the best guesses I can secure it appears that less than forty per cent of the land is reasonably well cultivated, and less than twelve per cent of it is yielding maximum returns.

That we have practically reached the stage where we have ceased to be an exporting nation of food products and are becoming dependent on foreign nations for the necessities of life is a sad commentary upon our use of the opportunities bountifully bestowed upon us. We had better frankly face the fact that we are relatively inefficient, take stock of our shortcomings and earnestly seek the remedy.

Penalty of Fostering Industrial Centers and Letting Agriculture Take Care of Itself

That we are suffering the penalties of too great ease of living and of making a living over too long a period is obvious. We have followed the course of least resistance and have followed it to the limit. We must now face the problem of planning; of the systematic direction of our energy; and of invoking the aid of science and of the best approved devices. It is not singular in reality that we should find ourselves in our present plight. Recklessness and waste have been incident to our breathless conquest of a continent, and we have had our minds

too exclusively directed to the establishment of industrial supremacy in the keen race for competition with foreign nations. We have been so bent on building up great industrial centers by every natural and artificial device that we have had little time to think of the very foundations of our industrial existence. It has been assumed that we have had a natural monopoly in agriculture; that it could take care of itself, and for the most part we have cheerfully left it to do so.

The problem of the individual farmer has received scant enough systematic attention, and the problem of rural life as a whole, has, until recently, been practically ignored.

The story that comes from every section is substantially the same; it is a story of increasing tenancy and absentee ownership; of soils depleted and exploited; of inadequate business methods; of chaotic marketing and distribution; of inferior roads; of lack of supervision of public health and sanitation; of isolated and ill-organized social activities, and of inferior intellectual provision.

The Country Child Versus City Child

Consider the position of a child in any of the more remote sections of the rural districts in America today, and ask yourself what his opportunities are for training and development and efficiency as compared with those of a similarly endowed boy in an urban community. The latter lives in a house supplied with running water, the purity of which is protected by ample means; walks on sidewalks free from dust and mud; drives along adequate roads; has access to many of the things that minister to the legitimate pleasures of living; has at hand the best trained physicians and surgeons; publicly maintained hospitals; well-planned schools of every grade from the kindergarten to the professional school or college. And most of these things he secures at a minimum expense thru a relatively low rate of taxation. The other picture is easily drawn. If we may confine our thought for the moment to the schools alone we find that outside of New England, which has solved the rural school problem largely by eliminating the rural population, all that the average country boy has access to is an ungraded school, usually taught in one

room by a girl with less training than a high school graduate, receiving \$40 or \$50 a month for seven or eight months in the year, teaching all ages in thirty or more classes a day. If by any chance a boy survives this and desires to go further it is necessary for his father to put him on a train, buy his transportation, send him to a town, pay his board, his tuition, and lose his services during the session, and probably lose him permanently from the country. I have said it before and I am not afraid to repeat it that I do not quite see how a father and mother who are ambitious for their children can gain their own consent to continue to live in remote rural districts under existing conditions.

The People the Greatest Undeveloped Resource

The greatest undeveloped resource of any community, as our great Ambassador to Great Britain has so emphatically said, is the people. And if we devote more enlightened attention to the conservation and development of the people we shall be relieved of much of the concern about the conservation and development of our natural resources.

Some Colleges not Doing Their Duty

Now this problem of the development of agriculture and of rural life is one which requires the most serious thought of the best agencies in the nation. It is one primarily for the farmers themselves, and I clearly recognize that they have done most and will continue to do most to solve it. But they need, deserve, and demand assistance and will have it. The nation has created certain responsible instruments for their assistance. Among these are the state departments of agriculture, and the state colleges of agriculture. That all of them have done good work no one can question; that some of them have done superb work many will gladly recognize; that some of them have not lived up to their opportunities admits of no manner of doubt.

Those colleges that are not doing their duty to their states are not wholly to blame, but in my judgment they are largely to blame. The trouble in too many of our states has arisen from a dispersion of agencies undertaking to aid in the advancement of agriculture and to consequent jealousy and antagonism.

Just as there is individual selfishness so there is institutional selfishness, and some institutions like some individuals get to thinking so much about themselves that they forget the people whom they serve and who make

them possible. I could point to state after state where the state department of agriculture is jealous of the state college of agriculture and is busier watching the advances of the state college than it is with its job of helping the people. I could point to state after state where the state college of agriculture and the state university, created by the same people and maintained for the service of the same people, are busier preventing extensions of one another's activities than they are with extensions of their own activities for the service of the people. Neither is content to find out the job it can do best and to do it. It is trying to prevent the other from doing a job that it might do.

Where so much is to be done, waste that comes from antagonism and duplication is criminal. The average state college of agriculture can render its best service thru research and inquiry into the needs of its community, thru the successful operation of short courses, and above all, thru aggressive and active service to the adult farming population. It is of the greatest urgency that all the agricultural agencies of the nation shall put their heads together and co-ordinate their activities. Unquestionably in the past there has been much useless duplication of effort, no little waste of money and energy, and no inconsiderable amount of hostility and friction.

One of the most gratifying developments of recent years has been the clear recognition of the evils growing out of lack of systematic planning and co-ordination of effort and the state colleges of agriculture, the Federal department, and congress, are determined to eliminate them.

Secretary Houston then reviewed briefly the many and varied activities of the department, which he said would astound those who consider it an agency for the distribution of garden seeds.

Mr. Houston continued:

Recommends Discontinuance of Present Seed Distribution

You may be interested to know that in the estimates just submitted to Congress it has been recommended that the distribution of ordinary vegetable and flower seeds be discontinued and that part of the \$300,000, heretofore devoted to this purpose be used to procure, propagate and distribute among the people, new and valuable seeds and plants. If Congress sees fit in its wisdom to accept the recommendation, particular attention will be given to the securing and distribution of new and valuable seeds and plants, including forage crop seeds, whose character and quality will be thoroly known and tested; and

pains will be taken in every instance to see that a sufficient supply is sent to make it worth while for the individual farmer to make an experiment.

Demonstration Work to be Extended

Heretofore the work of the department has lain chiefly in the field of production, and even in this field it has been conscious of limitations. The chief difficulty has been to make its results known effectively to the great mass of the farmers who most needed the knowledge. There can be little doubt that the federal department of agriculture and the various state colleges and the best farmers have enough knowledge to revolutionize the nation if it could be conveyed to all farmers and they could be induced to utilize it. Suppose what is known about hog cholera, tick eradication, the boll weevil, and other things could be made intimately known to every farmer and he could be induced to apply the remedy? What hideous waste could be avoided!

How to get this information to the last man on the farm has been one of the most troublesome problems confronting the Department. After many years, an effective method has at last been devised. The demonstration plan has now made its appearances. The old lesson that personal contact is of the highest value has been taught.

A Decentralizing Plan

It is perfectly apparent that an extension of this demonstration work will be made and a bill is now pending in Congress, known as the Smith-Lever agricultural co-operative extension bill, which embodies the main principles approved by experience. It will insure the closest co-operation of the Federal Department and the state colleges; it will make both of them think and plan; it will stop haphazard enterprises; it will give each all the facts about the activities of the other; it will guarantee that nothing shall be undertaken until it has been carefully thought out in advance. It will prevent duplication of effort and will remove friction. It will insure the expenditure of the Federal funds for the purpose for which they were intended; it will provide an automatic check against the looting of the Federal treasury by requiring an equal appropriation from the state treasury and by fixing an ultimate limit to the Federal contribution; and finally it will prevent the building up in Washington of a great centralized bureau, intimately reaching into every farm of the nation.

The Rural Credit Problem

We shall leave nothing undone to stimulate production directly and to

convey information to the farmer, but we have suddenly been brought face to face with the fact that in many directions further increased production waits on better distribution.

There is a general impression that farmers need better credit arrangements. The slightest reflection will convince one that all farmers do not equally need it; that all sections are not similarly circumstanced. From one section comes the cry, not for capital at lower rates, but for information as to how to invest capital. That many communities need long time loans under reasonable conditions for the purchase of farms and for permanent improvements and that other communities need an improvement in conditions under which the small farmer may secure relatively small sums for operating expenses at low rates, can not be denied. The question is one of ways and means. And just what is needed and just what should be done, no one, so far as I have been able to discover, is at present sufficiently informed or wise enough to assert. For a generation economists have known the facts about European conditions but few have investigated the conditions at home. The Department of Agriculture is now definitely and rapidly making the home survey and should in a short time have information of great value to the farmer and to the legislature.

Concluded in Next Issue

CREDIT AT THE BANK

In a recent address Asa E. Ramsay of the First National bank of Muskogee, Oklahoma, made the following statement:

I want to see the time that when the farmer applies for a loan the banker will not have to bet on the ability of the farmer and the favor of the season to meet the obligation of his bank. I want to see the banker ask how many silos the farmer has; how many head of good hogs, good cattle, and other livestock and what condition they are in, and how much attention the farmer pays to dairy products and feed crops. The banks would rather lend money at 8 per cent, knowing you have the stuff to meet the obligation, than at present rates of interest charged. By simply changing agricultural methods and diversifying crops, you can change your standing with the banks. Nothing in the world will keep you from paying high prices for food-stuffs unless you cultivate the soil.

Bankers are always looking for safe places to invest money. In North Dakota, especially in the western part of the state and in other of the newer sections, interest rates on farm loans are high. Why? Because, as this Oklahoma banker has pointed out, the investment is not absolutely safe. It is a bet, a speculation. If the crop turns out well, there is a big return—but if there is a poor crop, the bank stands to lose. It is because of this fact that the bankers are among the most ardent supporters of the diversified farming movement in North Dakota. They are backing up corn contests, pork production contests and other contests with liberal cash prizes, to get farmers interested in these things purely from a business basis. They know that when the farmers are thoroly awake to the possibilities of diversified farming that the North Dakota farm will be a safer place to invest money.

There have been criticisms from some farmers about the business man trying to tell the farmer how to run his business. If the business man does offer the farmer advice, it is because he has learned from hard, cold experience that the farmer is making a mistake, and because of that mistake the entire community is the loser.

YOUNG MEN AWAY FROM HOME FIND FRIEND IN MINNEAPOLIS

Y. M. C. A.

Special Department is Added for Strangers

The Minneapolis Y. M. C. A. has added a new department to its already large and varied activities. This department is especially for the young man away from home and thru its activities already from 50 to 100 men who have broken home ties and are entering upon life in a strange city are being helped every month to find good homes and to make new friendships.

When a young man leaves his home and goes to a larger city to locate he is immediately confronted with the question of finding a place to live. This is a far more serious question, especially in a large city, than the average young man who has been accustomed to a good home realizes. His room and the place where he rooms is now to serve as his home. If it compares favorably with the home he has just left, his struggle with the city with its host of strange surroundings and conditions will be made easier, but if he has to return after a day's work to an uncongenial, un-

pleasant home or to one where the influence is not good, his new life is very likely to become discouraging and unsafe.

The Young Men's Christian Association of Minneapolis, knowing the loneliness, the dangers and also the large influence of the first days of a young man's life away from home among strange surroundings, is especially anxious to become a friend to the strangers coming to that city and to help them form new friendships of the right kind and to get established in safe and pleasant homes. It has therefore established this new department. Mr. J. Z. Nebbergall, formerly State Secretary of the Young Men's Christian Associations of South Dakota, is the secretary in charge and is developing a large Board and Room Directory. Every room is thoroly investigated and all the information possible is learned about the homelife of the family and intelligent consideration is given the case of every young man applying for a room, in an endeavor to locate him in just the right home to meet his special needs. After he is thus located this department further provides social functions, welcomes him to the Association building, helps him make new friends, refers his name to some young man in the church of his choice and does whatever other things seem to be needed to help him get properly located and established in his new location.

The Y. M. C. A. would strongly discourage young men from going to the large city to seek work unless they are skilled in some lucrative trade or profession and have some definite employment arranged for in advance. In his struggle with the city the unskilled or inexperienced young man is so handicapped that advancement is mighty uncertain and many young men find themselves unable to rise above the meager position which they first secured when arriving in the city. But to all young men who do go to Minneapolis the Y. M. C. A. of that city offers a hearty welcome and will be glad to have them come to its building at 44 So. 10th St. immediately upon their arrival in the city.

It will also be glad, to welcome any young men into its membership to enjoy the privileges of its physical and educational departments, its religious meetings and Bible Classes, good fellowship and entertainments, but membership is not a requisite and its room directory, social functions and welcome are offered freely and gladly to every young man away from home.

The FARMERS' ROUND-TABLE

FARM NOTES

W. C. Palmer, Agri. Ed., N. D.A.C.

Buying and Selling

The persons who lets the other fellow set both the selling and buying price is not getting his fair share. The farmer is in just about that kind of a fix. How can it be remedied? Labor was in just that fix until they organized. When organized in unions they could bargain as to the thing they had to sell—their labor. The farmers will have to co-operate if they want to have something to say in fixing prices. The fruit growers of the West have become prosperous thru the fact that they are organized. They no longer put their whole fruit crop on the market the day it ripens and so glut the market. They hold their fruit until the market needs it. In this way they get a good price all the time. They do their own selling so no one can manipulate the market.

Some seem to think that a big organization is necessary. It is advantageous but the beginning must needs be small. Three or four farmers can very well start co-operating. They can grow the same kind of hogs and market together. If in dairying, they can sell their cream together. They can buy their groceries together from the grocer. It will be worth the while of the grocer, the hardware dealer, the machine agent, the banker to make some concession when dealing with several persons at once, whether it be buying or selling. Three or four working together can do better than each one alone. It will be cheaper for

the business men in town to deal with several at once than with one at a time. In working together in marketing a great deal will be learned as to the needs of the market.

The fruit growers of the West, when they began to co-operate in marketing, soon learned the demand of the market and sent out only the fruit that was up to standard. In some cases where orchards had been planted to inferior varieties the growers were compelled to destroy them and put in varieties that were up to standard. In this way a reputation was made for the locality. The same can be done with potatoes, hogs, cream, or any other product as well as with fruit.

A start must be made. The way to make the start is to begin working with one or two neighbors. More will join when they see you do something. When several small beginnings have been made a large organization will be possible. The small beginnings must come first—and don't wait for the other fellow to start. Do that yourself.

Why a Grange?

The Grange is a well-established farmers' organization. In fact it is the only national farmers' organization. In many states it has done much to improve country life conditions. The Grange provides social life for men, women and children. It makes farm life more interesting and attractive to boys and girls. Thru its long continued work it has developed educational and social features that are especially well adapted to rural

meetings. Social life and co-operative work is the great need of the farmers. Any community that is interested in the Grange and that desires to have one organized should write to W. C. Picking, Sunnyside, Wash.

Farming and Capital

The Wisconsin Experiment Station have been investigating the relation of operating capital to profits in farming. They found that when the operating capital, that is, machinery, cattle and cash, was 13½% of the total, the profits were \$167.78 per farm. But increasing the operating capital to 17.7% raised the profits to \$433.68, and when it was raised to 28.2% the profits went to \$1628.55. When the operating capital was 33.3% the profit went to \$3511.33.

These figures are the averages of many farms and indicate quite plainly that there is a close relation between operating capital and profit; the biggest profits coming when one-third of the capital was in stock, machinery and cash for operating and but two-thirds of it in land and buildings. When nearly all the capital was in land and buildings the profits were smaller, or to use the familiar expression, these farmers were land-poor. Having nearly all the capital in land and buildings is a good deal like the merchant who has a big store but scarcely any goods on the shelves. Better to have a smaller store with well-stocked shelves. Likewise it is better to have a smaller farm, provided it is well-supplied with stock, machinery and cash for running expenses.

Barren Stalks

Barren stalks reduce yields of corn. The barren stalks are more common in some varieties of corn. They are also caused by poor seed, poor soil,

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poor seed bed or adverse climatic conditions. Anything which prevents the corn plant from making a good growth may result in barren stalks or nubbins. Recently in judging corn fields in Foster, Wells and Stutsman Counties determinations were made of the number of stalks with good ears—the barren stalks and nubbins were classed together. Of the N. W. Dent 49% of the stalks had good ears. Of the nine fields the highest was 62% and the lowest 28%. Of the white dent the stalks with good ears averaged 66%. The highest was 75% and the lowest 53%. Of Minnesota 13, 70% of the stalks had good ears. The N. W. Dent averages a little less than one good ear to the hill, while the other dents averaged $1\frac{1}{3}$ good ears per hill.

This emphasizes the need of carefully selecting, curing and acclimating the seed corn and of making a good rich seed bed as well as keeping it clean from weeds.

One ear or one and a half ears per hill can be improved upon.

THE DUAL PURPOSE BREEDS

W. B. Richards, Prof. Animal Husbandry, N. D. A. C.

The following breeds are classed as dual purpose: the Milking Shorthorns, Red Polled, Brown Swiss and Devon. The Brown Swiss, however, are classified by many as a dairy breed and the writer is of the opinion that it is the class to which they belong. The Milking Shorthorns and the Red-Polled breed are the only breeds that it is advisable to consider for our Northwestern conditions. The Devon breed has considerable merit but very few representatives of the breed are available in this country.

FARMERS' CLUBS

J. H. Worst, Pres. N. D. A. C.

Every farmer of the state should be a member of a farmers' club. This is especially true of small farmers—those managing from a quarter section to a half-section farm—the sort of farmers that will survive when the last bonanza farmer goes out of the farming business.

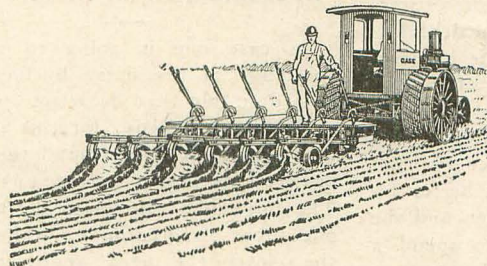
Farmers have need of consultation. The farmers' club affords this opportunity. The wives and grown-up children of farmers also should join these clubs and participate in their deliberations. In this way a genuine community spirit can be organized that will

inject new life and interest in the rural home and in up-to-date farm management.

The chief objection to rural life—its isolation, can thus be removed, and its many hitherto undeveloped advantages enjoyed. Moreover, plans

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The data of this contest enables every farm power user to make practical comparisons of the various makes and types of tractors and tractor gang plows, based on the official tests made under direct supervision of the Canadian Government.

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The 80 H. P., three times entered, three times winner.

Oil Case 60 H. P. Tractor, in its Gold Medal winning series, was given 79.15 points, out of a possible 100, on Design and Construction. This tractor has always won a higher score on accessibility, protection of working parts and ease of manipulation than any other make, in any international combustion class, entered at Winnipeg.

Gas Case 40 Gas and Oil Tractor captured the Gold Medals in both Gasoline and Kerosene classes.

The performance of this tractor, burning kerosene, was the sensation of the Contest. Its nearest competitor required 42 per cent more gasoline

and 32 per cent more kerosene to do the same work.

Case 25 won Gold Medal, scoring 36 per cent more points than its nearest competitor. This was the first public appearance of this new model. Its winning the Gold Medal was a most satisfying endorsement of our policy to do no experimenting at the cost of our customers.

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for co-operation in buying and selling as well as in harvesting and threshing can be worked out at these club meetings to the general advantage of the farming community.

There is always something to be learned from the experience of one's neighbor, and to learn is the same as to grow. But where there is no growth, there is decay.

Then the young people yearn for companionship. They are entitled to it. If the farmers' club does not provide healthful companionship, they will go elsewhere to obtain it, oftentimes where it is not so morally healthful.

Farmers must get into the habit of co-operation. Large sums of money can be made as well as saved by co-operating in buying and selling. The farmers' club is a good place to meet and talk things over, to get better acquainted, and to give children and the women folks a chance to spend a pleasant afternoon in summertime, or an evening during the winter season.

If every farming community had a social center, the boys and girls would form a better opinion of farm life, and when their parents are too old to manage their farms, the children will take their burdens off their shoulders and remain on the old homestead.

By all means organize farmers' clubs.

PLOWING OR DISCING

W. R. Porter, A. C., N. D.

Using day labor at the day rate and horse labor and machinery depreciation the same as those used in bulletin 104, of the North Dakota Experiment Station, it would cost approximately \$1.40 per acre to fall plow land with six horses in North Dakota. Spring plowing will cost approximately \$1.12 for five horses in the same state. Discing in the fall costs approximately 40 cents per acre for single discing and 80 cents per acre for double discing. Spring discing costs approximately 35 cents per acre for single discing and 70 cents per acre for double discing. Therefore, if the land was not fall-plowed but spring-disced twice, the cost of producing wheat is lowered 70 cents per acre, with discing as compared with plowing. Fall-plowed land would therefore have to yield from one to one and one-fourth bushels more wheat per acre at present prices to pay for fall plowing as compared with double discing in the spring. Spring plowed land would therefore, have to yield from one-half to three-fourths of a bushel more wheat per acre to pay the cost of plowing as compared with double discing in the spring. As a general

proposition, both fall and spring plowing will pay much better than double discing for wheat but there are some conditions where the soil is light and sandy and inclined to blow. Here it is better to put wheat in on disced land rather than on fall or spring plowed land. Such conditions, however, are comparatively rare in North Dakota.

THE DAIRY BREEDS OF CATTLE

W. B. Richards, Prof. Animal Husbandry, N. D. A. C.

In case one is going to make a speciality of the dairy business it is desirable that he select some one of the dairy breeds for this purpose, to be used either as foundation stock or for the purpose of grading up the herd. The closer one adheres to the blood of one breed in grading up a herd and the closer the herd approaches the purity of blood of some one of the

dairy breeds, the greater will be the result obtained in the form of profits.

The different breeds of dairy cattle vary considerably in their adaptability to conditions. For this reason it is a good plan for every one to make a careful study of the breeds and select the breed best adapted to his conditions.

The dairy breeds are as follows: Jersey, Guernsey, Holstein, Ayrshire, Dutch Belted, French Canadian and Kerry. The first four breeds are the most important and the only breeds to be seriously considered by the farmers of the Northwest.

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VENTILATION OF STABLES

Compiled from Minnesota Station
Bulletin 98 (U. S. Dept. Agr.
Yearbook)

Some experiment station work along the line of stable ventilation has been summarized in a previous bulletin of this series. Many problems have arisen in connection with the ventilation of stables and have assumed such importance that the necessity for the study of the subject from all possible standpoints has been recognized. Important contributions to the subject have recently been made by M. H. Reynolds, of the Minnesota Station. The results obtained by this investigator appear to be at variance with the commonly accepted ideas of ventilation and suggest that new explanations are needed of the observed facts in cases of good and poor ventilation.

One of the main objects of this study was to determine the effect of carbon dioxide upon animals confined in stables. In experiments with human beings in the respiration calorimeter Professor Atwater has shown that man remains apparently in perfect comfort in an atmosphere containing 2.3 per cent of carbon dioxide, or almost 80 times the quantity found in ordinary atmospheric air. The air, however, was kept pure in other respects and the amount of moisture was not unusually high. In the experiments carried out by Doctor Reynolds on cattle the air was saturated with moisture and the amount of carbon dioxide varied, being in some cases as high as 2.67 per cent, as compared with .03 per cent in ordinary air. Moreover, the air contained ammonia and other organic materials which may be given off in expired air.

In such an atmosphere, obtained by confining steers in a nearly air-tight box stall, steers were kept for periods varying from two to twenty-eight days. None of the bodily functions were materially disturbed, the only effects observed being a slight increase in the rate of pulse and respiration and a small elevation of temperature. The animals showed good appetite and appeared to be in perfect health and comfort during confinement. The amount of moisture in the atmosphere of the stall was so great that water ran down the sides of the stall and the walls became covered with mold. Nevertheless, animals confined under these circumstances not only appeared to remain healthy and comfortable, but gained at the rate of 1 pound per day. Even the healing process following upon dehorning seemed not to be interfered with by confinement in the moist atmosphere

containing more than 80 times the normal amount of carbon dioxide.

Doctor Reynolds concluded from these experiments that the common explanation of the desirability of ventilation in stables must be revised to conform with the results which he has obtained. It is suggested that the air requirements recommended by various investigators for farm animals confined in stables are altogether too high, and, in most cases, impossible of accomplishment. These requirements vary from 14,000 to 32,000 cubic feet per hour, whereas the stall in which steers were confined during the experiments of Doctor Reynolds, contained only 784 cubic feet of air. It is urged that from the standpoint of economy and profit the fundamental problem in stable ventilation consists in determining the least amount of air change necessary to keep the animals in health and comfort. Further experi-

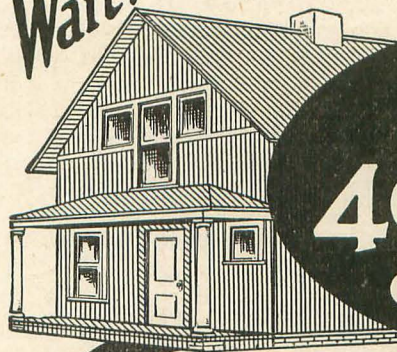
ments will be carried out to determine the minimum amount of atmospheric change required for this purpose. It is suggested that a well-lighted but poorly ventilated stable is perhaps superior from a sanitary standpoint to one which is poorly lighted and well ventilated.

HOW TO TELL THE AGE OF
YOUNG CATTLE

DECEMBER—EIGHTH YEAR

The calf when born has two pair of incisors, the other two pair appear during the first month. When a calf is eighteen months old, it loses the middle pair of milk incisors, and grows a permanent pair. The next pair, one on each side, is replaced at twenty-seven months of age, the third pair at thirty-six months, the fourth or outside pair, at forty-five months.

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The time of appearance of these incisors varies within rather narrow limits, so that we are able to tell the age of young cattle fairly accurately.

The calf also has a temporary set of molars, which are later replaced with permanent ones, but they are not considered in estimating the age of the animal.

—G. E. Morton, Colo. Agri. Col.

DON'T TURN CATTLE INTO CORN FIELDS DECEMBER—EIGHTH YEAR

Farmers in the corn belt, especially in the middle and upper Mississippi Valley, have, at various periods experienced loss of cattle pastured on standing cornstalks after the corn has been harvested in the autumn. An element of mystery has surrounded the death of cattle in these instances. The disease is characterized by a very rapid course; in fact, very commonly there are no premonitory symptoms, and it is not unusual for the owner upon visiting the field in the morning to find one or more fat cattle dead. Another peculiarity of the disease is that losses may occur on one farm or in one field while cattle on an adjoining field or farm may be free from the affection.

Investigations have been made by the Department of Agriculture, but thus far the cause of the disease has not been established. As death is generally sudden and there is little opportunity for treatment, animals should not be turned into a field with standing stalks. As a matter of fact the disease may be actually prevented by cutting the stalks early and only feeding them after they have been carefully cured and removed from the field. Losses from feeding on standing cornstalks emphasize the economic value of cutting the corn and feeding the dry stalks, under which condition they may be fed with the least possible waste.

The so-called cornstalk disease should not be confused with poisoning from eating sorghum. Deaths among stock from eating sorghum have been traced to prussic acid poisoning, which poison the sorghum under certain conditions of growth has been found to contain in combination.

OHIO CORN BOYS TO WASHINGTON

On December 3, fifteen hundred boys and girls, comprising members of the corn and canning clubs of the state of Ohio, with 500 adults will arrive in Washington, coming on six special trains. This will not be the

annual Washington visit of the state winners, but is merely a junket of the Ohio members at their own expense. Quite a number of hotels will be required for them, but reservations are already being made.

On the morning of their arrival they will march to the east front of the Capitol, where they will be met by some of the members of the agricultural committees and escorted over the building.

There will be three days of sight-seeing. The party is so large that it will have to be divided into four sections, and these will inspect all the federal departments, and they will also be taken to Mount Vernon. The day after their arrival they will assemble in the grounds of the Department of Agriculture, and will be addressed by Secretary Houston of the Department of Agriculture.

BOYS' PIG CLUBS NEXT Richard Hamilton Byrd

The announcement is made by the Department of Agriculture that in addition to its Boys' Corn Clubs and its Girls' Canning Clubs, Boys' Pig Clubs are now being organized in the South for the purpose of increasing the supply of pork and encouraging good breeding of hogs. Already clubs have been organized in Alabama and Louisiana, and a club organization has been started in Georgia.

In organizing the Boys' Pig Club, it is the purpose of the Department to establish clubs in every southern state. The Animal Husbandry Division is co-operating with the Farmers Co-operative Demonstration Office in the Bureau of Plant Industry and has already established clubs in the two states mentioned. The organizing is being done by the officials of the Farmers Co-operative Demonstration force, and the agents of the Animal Husbandry Division, Bureau of Ani-

mal Industry, and demonstrations and instructions in how to handle the stock and to breed a superior type of pigs have been given.

It is the purpose of the Department to have every member of the Club encourage not only an increased production of the swine family but a better breed of pigs than is being raised at present. It is a serious purpose the officials of the Department are engaged in—one that is aimed at the high cost of living.

The production of pork is not keeping pace with the increased population and something must be done to harmonize these two elements. If each member of the Club—and they will be growing, it is expected, all the time—will see to it that one more pig and a better pig is produced each year then a long step will have been taken in meeting the ever-growing chasm between pork production and increased population.

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TOGETHER AT LAST

The Accuser and the Accused to Meet. Dr. Frederick A. Cook, Discoverer of the North Pole and Rear Admiral Peary of Arctic Fame to Lecture from Same Platform.

Mr. R. E. Peary is booked to lecture at the Bell Theatre at Benton Harbor, Mich. for Nov. 17th and Dr. Frederick A. Cook for the following night at the same place.

In the October issue of the Platform (a Lyceum and Chautauqua Magazine published in Chicago) Mr. Peary was asked to explain a few of the discrepancies in his Polar report and to give **One** reason why Dr. Cook did not discover the Pole. The Platform challenges Peary to appear and answer the charges of bribery, theft, immorality and child desertion that Dr. Cook has been making against him, daily, from the lecture platform. Thousands of these papers were mailed to Benton Harbor and vicinity and created a great deal of comment and speculation as to whether Peary would appear and face the charges like a man or whether he would find some convenient reason to cancel. Dr. Cook has accepted the night following Peary's lecture to back up the charges he has been making.

Watch these two lecture dates. Will both explorers appear? Will Peary answer Cook's charges? Will he come out with some specific charge to back up his slanderous insinuations against Cook and give Dr. Cook an opportunity to answer?

Note carefully who makes specific charges and answers like a man, or who backs out and crawls like a snake.

This is a question of National interest.

THE NEED FOR BETTER TELEPHONE SERVICE IN COUNTRY DISTRICTS

W. J. Trimble, A. C., N. D.

There is need for even better telephone service in the country than in

town, for in town people can more easily get into communication with the person they want than in the country. If any one gets sick in the country, if the telephone is out of order, a long drive and much delay and expense may result from poor service. Many a long drive to town is caused by the telephone being out of order. When one has learned to depend upon the 'phone it seems doubly hard not to be able to use it just when it is most needed.

On many country lines something seems to be wrong a good share of the time. Wires get crossed or are blown down, there is a choice assortment of distracting noises, or "central" cannot be gotten.

Some responsible and efficient person should be in charge of repair work. Where the fault lies in the central office, more prompt and efficient attention should be given to troubles on rural lines. The complaint of a business man or even of a

resident in town will receive prompt attention by the manager, but farmers may be put off week after week with wretched service. A grave responsibility is upon those who are in charge of rural lines, for the issue of life or death may at times depend

TRAPPERS

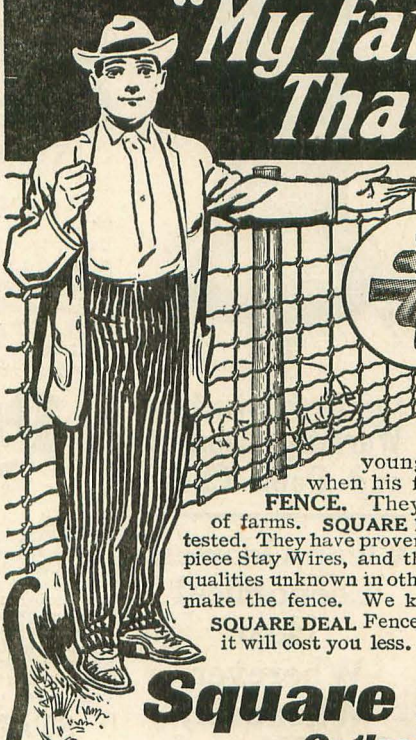
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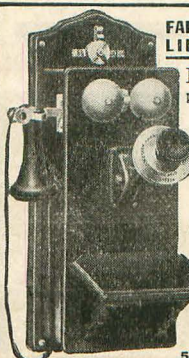


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QUERIES AND ANSWERS

By Members of the N. D. A. C.
Faculty

Should a horse have all the hay it will eat?

A horse should not have all the hay it can eat. They will over-load and distend their stomachs and cause themselves injury. It is more essential to limit the amount of hay a work horse receives because it is not well for a horse to work on too full a stomach. Colts under two years of age should be fed all the hay they can eat. The rule to follow in feeding hay by most successful feeders, is one pound for every one hundred pounds the horse weights.—W. B. Richards.

Should corn be manured before or after plowing?

Where coarse litter is used, it must be plowed under so as not to interfere with the cultivation. If well composted manure is used, top-dressing will prove very satisfactory. The time to apply it depends more upon conditions than upon the results secured.—O. O. Churchill.

Please give best method for churning separator cream.

Cool the cream immediately after each separation by placing the receptacle in cold water. Never mix cold and warm cream for bad flavors are sure to result. Keep the cream in cool place till within a few hours of churning. Churn at between 50 and 60 degrees F.—G. L. Martin.

Is there need of growing clover and alfalfa for the purpose of enriching North Dakota soils?

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FARGO, NORTH DAKOTA

This must depend upon the character of the soil in the locality. In the lighter soils of the state there is already a deficiency in available humus and available nitrogen. Humus improves the physical condition of the soil; is a conservator of the moisture of the soil; and thru its decomposition it aids in rendering available the mineral constituents of plant food in the soil. Humus is derived from the organic or vegetable matter of the soil thru special processes of decomposition, brought about largely by the action of bacteria and fungus growths in the soil. The growth of clover and alfalfa tends to increase the amount of organic matter, and therefore the amount of humus forming material in the soil renders the physical condition of the soil better; thus these crops are essential for best results in any community.—E. F. Ladd.

Is the milk from a cow a few days previous to calving fit for use?

It should not be used within ten days or two weeks previous to calving.—G. L. Martin.

Should corn be drilled or checked?

If corn is used to clean up weedy land, it should be checked. If all that is desired is a large yield of fodder, drilling will give the best results.—O. O. Churchill.

What breed of cattle is considered the best adapted for dairying in North Dakota?

There are four breeds of dairy cattle that will give good results if properly fed and cared for. They are the Holsteins, Jerseys, Guernseys and Ayrshires. The Jerseys and Holstein breeds are easier obtainable in the state at present. The number breeding pure bred dairy cattle in the state is very small. Many seem to favor dairying with a dual purpose breed, one to produce milk and beef both. For this purpose, I would recommend the Red Polled or the milking strain of Short Horn, altho the latter are rather scarce at present.—W. B. Richards.

For how long is a license good?

A license is good for three years if renewed yearly, except in the case of horses that are ten years of age or over, at the time of examination for soundness, in which case the license is good for all time if properly renewed.—B. H. Critchfield.

What is the best way to prepare corn land for a grain crop?

For North Dakota conditions corn ground need not be plowed for small grain if it has been cleanly cultivated.

Clay soils usually need a double discing and at least one harrowing in the spring. The coarser textured sandy soils may sometimes be prepared with less work than this but a granular surface soil sufficiently fine to cover the seed properly should be produced. It is difficult to get as firm a seed bed on corn ground after it has been plowed as it had before plowing.

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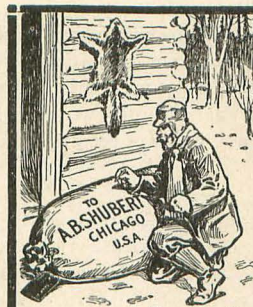
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GEO. HAUSMANN, Poultry.

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Address all business correspondence to the
Lisbon office.

Vol. 15 NOVEMBER, 1913 No. 5

The autumn of 1913 will go down into history as one of unusual mildness.

There is a fair degree of moisture in the soil, which, if properly conserved, should insure a bumper crop next year.

Weeds do more actual harm in North Dakota than any other one controllable evil. They are the cause of drought as well as low yields of grain.

Intervention! Who would give the life of one North Dakota boy for a whole regiment of Mexican troops? The President is right. Commend him.

The North Dakota Farmer is the "official organ" of the farmers of North Dakota, and in fact of every progressive farmer in the Northwest who believes in our policy.

Our motto: Better a small paper containing what you can make use of than a big publication three-fourths of which does not apply to the conditions of your locality.

The long cold months of winter can be profitably as well as interestingly spent by reading up on agriculture and farm management. The North Dakota Farmer will help to make the winter months pleasant for all of its subscribers.

Read the address of Secretary Houston. He discusses the live issues of the farmer. We learn with regret that Secretary Houston's health is impaired. May it speedily be re-

stored. The nation needs just such breadth and insight as he is exhibiting.

In this issue we have treated largely of the care of livestock and the value of legumes. In our next issue much attention will be given to plant diseases and insects, and to dairying. Let there be a bitter warfare against our enemies, plant diseases and insects, and just as earnest championship of dairying.

It is not enough to know how to make money. How to use it to the best advantage, how to get the most out of life, how to make the best use of life, are of the utmost importance unless one has no other motive than to see how much he may accumulate of what he does not need before closing his eyes in death.

We welcome the hundreds of new readers since our last issue. Remember that this is your paper. Our object is to build up, not to tear down. Our only purpose is to serve you and thereby better the farm conditions of the state. We welcome criticisms fully as gladly as we do words of praise, much as we appreciate the latter.

Some one made the statement the other day that he was afraid the silo would be the means of spreading tuberculosis among the herd. We venture to make the assertion that if he does not make use of the silo his pocket-book will have all the symptoms of consumption. The "all-wheat bacillus" is working havoc in some localities.

The manufacturer goes into the market and purchases trained young brains for a manager or superintendent. Why should the farmer not accept the services of the trained farm expert? Let him make use of the knowledge these young men have gained from scientific experimentation, even if some of them lack the sound common sense that long experience only will yield.

The formation of farmers' clubs thruout the state is progressing rapidly. Good teachers as a rule are eager to assist. Let one meeting each month be devoted to the young folks. It will help bind them to the home. Yes, and there will not be such an overcrowded condition at the state asylum at Jamestown. Alas! for the lonely woman who looks out across the prairie and longs for companionship. The only wonder is that no more become demented! Let there be a social center in every township.

"A little child shall lead them" was never more strikingly illustrated than in the boys' and girls' industrial contests the past few years. How forcibly these young enthusiasts have demonstrated to their elders the wonderful results from intensive cultivation! When the boy's yield is double the quantity of corn his parent can raise, and he can give a scientific reason for the difference, there is sure proof of "leadership."

Farmers should raise legumes to a far greater extent than has been their habit in the past. Clover and alfalfa, and especially the latter, can be grown successfully and profitably in every section of the state. Clover may not thrive with a nurse crop west of Jamestown or Valley City, taken one year with another, but alfalfa will, if a good seed bed is prepared and hardy seed, such as Grimm or Turkestan, is sown.

The corn-growing contests among school children inaugurated by the extension department of the Agricultural College, and the vegetable-growing and bread-baking contests carried on by the little girls, have awakened more interest and accomplished more real good than the extension division will ever get credit for. It is gratifying to learn that the good work will be pushed even more systematically in the future than in the past.

The great advantage from growing legumes is their influence upon the soil. Not only is abundance of nitrogen stored up in the soil, but the crop itself spells livestock on the farm, and hence abundance of manure to keep up the soil fertility. Farms, therefore, where leguminous crops are grown and fed to livestock will grow in value while those devoted so exclusively to small grains will depreciate in value. There can be no alternative.

While the big and near big interests of the country are endeavoring to make agriculture more fruitful, presumably for the farmer's exclusive welfare, and while they are singing the song of science as applied to agriculture, which is entirely appropriate, could not the farmers suggest some mighty important improvements that could be applied to business, to banking, to the elevator business, and especially to our American system of court procedure, etc.? This is merely a suggestion. A little science and some commonsense might well be injected into other things as well as into farming.

Pure Food Advertisers

The products advertised below are in compliance with the pure food law of North Dakota and of the highest grade.
ASK YOUR GROCER FOR THEM.

"BUY"

"EAT"

HOME BRAND

Pure Food Products

"ECONOMY" "SATISFACTION"

Griggs, Cooper & Co.

MANUFACTURING
WHOLESALE
GROCERS,

ST. PAUL, MINN.

Main Offices:
CORNER THIRD AND BROADWAY

DR. PRICE'S
JELLY

DESSERT
NUTRITIOUS-WHOLESOME

One package, 10 cents, makes one
pint of wholesome Fruit Jelly. All
flavors from true fruits.

The Purest of Pure Food Products

are packed under the Brands of

Nokomis
PURE FOODS

Blue Bird
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Stone-Ordean-Wells Company DULUTH, MINN.

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Butte, Great Falls, Mont.

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FOOD PRODUCTS

A GUARANTY OF PURITY. A WELCOME GUEST at every table where the HOUSEWIFE demands the BEST. THE MONARCH LABEL insures QUALITY in Coffee, Catsup, Pickles, Maple Syrup, Canned Goods or any article bearing the MONARCH BRAND of REID MURDOCH & CO CHICAGO.

ANOTHER PURE FOOD PRODUCT

CEREKOTA

Self-Rising

Pancake Flour

Is a Scientific Preparation of Healthful Appetizing Ingredients
and the Best Flour Milled in North Dakota

GUARANTEED Pure and Wholesome

Ask Your Grocer for a Trial Package

Bemmels Milling Company

Sole Manufacturers

Lisbon,

North Dakota

Livestock Department

STOCK AND FARM NOTES

N. J. Shepherd

Early and thoro training of the right kind makes safe and tradable horses.

A scrub may yield a profit, but if so a good animal would give a greater profit.

With colts the first year especially liberal feeding and care produce a liberal return.

Grooming is as essential to the health of horses as judicious feeding and watering.

The true wealth of the world is the production from the farm and from labor.

The young sow proves her future ability by the way she manages her first litter.

The food of support is more than the food of gain under the most favorable circumstances.

After the habit of fast walking is once formed any other gait may be taught the colt.

To secure the best results with the brood sow an even development is required from pignood to full maturity.

With nearly all classes of stock the larger the animal becomes the more it costs to make a pound of gain.

A horse with a good appetite at all times is generally able to stand lots of hard work and is seldom sick.

You reap what you sow, and according to your ground in which you put your seed, so is your crop.

The walk is the foundation of all other gaits and without beginning at the foundation all future developments will be unsatisfactory.

When the hens begin to lay thin shelled eggs it is a pretty sure indication that they are not getting lime. Fowls that have a good range rarely lay thin-shelled eggs.

As a rule it will pay to feed slop to hogs along in connection with corn. Hogs are so rarely fed so well on corn but that they would relish a good quantity of well-prepared slop.

The power of heredity in thoroughbred cows is stronger than in scrub stock and there is more uniformity in the offspring and habits of the cattle and desirable milk qualities as well.

Have a way and a best way and have a judgment that tells you your best way is giving you as good results in quantity and quality as some one else's best way, and if it does not, study out and find the difficulty and if possible apply the remedy.

Within certain reasonable limits an animal that is specially valuable for a breeder or for milk, or wool or any particular purpose, is profitable to keep as long as possible. In general its best work is done, its best products are yielded, after it has reached maturity and we should seek to prolong that period as long as possible.

Souring is not what is wanted in cream for churning; for if this stage is reached all the cream added to the churning that falls below this sour stage is not cut into like consistency and more or less loss ensues, cream can only be mixed with the older as it is going into the acid state. When cream is ripening it may be added to, if the precaution is taken to stir it thoroly so as to mix it well.

ACCOMMODATION FOR THE DAIRY HERD

DECEMBER—EIGHTH YEAR

The large and lofty barn, in which to keep the cattle and the crops, the manure and farm implements, all within four rectangular walls and under one roof, can no longer be regarded as perfection. No matter how

CLASSIFIED ADS.

One Cent a Word

Small advertisements will be classified under appropriate headings at the low price of one cent a word for each insertion. Cash must accompany all orders. Each initial or number must count as one word. TRY IT HERE.

LIVE STOCK

FOR SALE

GALLOWAY CATTLE

J. W. & F. T. PETERSON, Litchfield, Minn.

POLAND CHINA PIGS, also Shropshire sheep. Seed grain. GEO. N. SMITH, Amenla, N. D.

FAMOUS O. S. C. SWINE. Am now booking orders for fine pigs of April farrow. Price: \$18 each; \$35 a pair. All Stock recorded free. Shipping point: Mankato. ROBT. A. HAEDT, Eagle Lake, Minn.

ASH GROVE FARM—Knudtson & Son, Props. Breeders of Pure Bred Percheron Horses and Short Horn Cattle, Both Sexes. Stock for Sale. Route 1 Fullerton, N. D.

J. S. BIXBY

RED POLL CATTLE. If you want dual-purpose cattle, I have the best. Rhode Island Reds, also in stock. LISBON NORTH DAKOTA

FOR SALE. Work Horses, Drivers, Stallions and Double-standard Polled Durham Bulls. LEAL STOCK FARM Leal, N. D.



Purebred Registered

HOLSTEIN CATTLE

The Greatest Dairy Breed

Send for FREE Illustrated Book

Holstein-Friesian Asso., Box 135 Brattleboro, Vt.

ENVILLA STOCK FARM

Envilla Stock Farm, Cogswell, N. D. will quote you special prices on Angus Cattle, Shetland Ponies, Duroc Jersey Hogs, Wolf Hounds, Collies, Rat Dogs and other breeds, Angora Cats. All varieties of chickens; turkeys, geese, ducks, guineas, pheasants, rabbits, ferrets. Pets. Live Foxes, Skunks, Mink and Badgers.

MISCELLANEOUS

WANTED! To hear from owner who has good farm for sale. Send description and price. Northwestern Business Agency, Minneapolis, Minn.

FOR SALE

One of the best 640-acre stock ranches in the state of Montana. Close into town. First-class farming lands near town. All under irrigation. Price \$15 to \$30 per acre. Write to F. R. KRAMER & CO.

Malta, : : : : Montana

WANTED. Live Foxes, Skunks. Mink and Badgers, any time. Envilla Stock Farm, - - Cogswell, N. D.

WANTED: A Newfoundland male pup.

ALBERT JAQUA, Tokio, N. D.

AGENTS WANTED. Farmer's Directory, Account Book. Exclusive home territory. Easy seller. Big inducements. Particulars Free. Write Naylor 938 Ft. Wayne, Ind.

WANTED AGENTS either sex, for Economy Administration Cook Book, the much talked of and biggest seller of the year. \$10.00 to \$15.00 per day right now. Free descriptive circular, or send 25c. for Outfit at once, and first choice of territory. Best Terms. Also Ten Best Selling Holiday Books—Combination Outfit. 25c. 50 per cent commission. Address, A. B. KUHLMAN, Publisher, 136 W. Lake St., Chicago, Ill.

HOUSEKEEPER WANTED. One to go into partnership in raising poultry three miles from town at my home. Am 50 years old and have one grown son. The right one will be wanted for keeps. Lock Box 324 - - - Dickinson, N. D.

WANTED! 200 GAS TRACTOR MEN

To become experts through the Y. M. C. A. Gas Tractor and Auto School, Fargo, N. D. Three and six months' courses. School opens Oct. 15. Address Ralph R. Wolf, Gen'l Sec.

Twenty Acres, Irrigated, Part-bearing Orchard. 1000 boxes this year. I am the owner and must sell in 30 days. Write me for particulars. Photo W. H. ELLIS Coenid Alene, Idaho.

THE BEST LINIMENT

OR PAIN KILLER FOR THE HUMAN BODY

Gombault's

Caustic Balsam

IT HAS NO EQUAL

For —It is penetrating, soothing and healing, and for all Old Sores, Bruises, or Wounds, Felons, Exterior Cancers, Bolls, Corns and Bunions. HUMAN CAUSTIC BALSAM has no equal as a Liniment.

We would say to all who buy it that it does not contain a particle of poisonous substance and therefore no harm can result from its external use. Persistent, thorough use will cure many old or chronic ailments and it can be used on any case that requires an outward application with perfect safety.

A Perfectly Safe and Reliable Remedy for Sore Throat Chest Cold Backache Neuralgia Sprains Strains Lumbago Diphtheria Sore Lungs Rheumatism and all Stiff Joints

REMOVES THE SORENESS—STRENGTHENS MUSCLES Cornhill, Tex.—“One bottle Caustic Balsam did my rheumatism more good than \$120.00 paid in doctor's bills.” OTTO A. BEYER. Price \$1.50 per bottle. Sold by druggists, or sent by us express prepaid. Write for Booklet R. The LAWRENCE-WILLIAMS COMPANY, Cleveland, O.

well arranged and how thoro the ventilation, the danger of loss and damage is too great. It is well to house all the forage, and a large storage building may be necessary. Economy of labor requires the forage to be easily placed before the cattle. The best modern practice calls for a separate or slightly attached building for the cows, with no manure cellar under them and no large quantity of forage above them, and preferably none at all. The best provision for such manure as can not be at once applied to the land is an open shed or covered yard. The cow-house should be on the ground level, rather than in a basement, and be light, dry, and roomy. A room open to the roof, which is fairly high, is better than a low, level ceiling above the cows. The former may involve a little more work to keep free from dust and cobwebs, but it affords the air space needed for health and comfort. The latter necessitates special arrangement for ventilation, and this, constructed on the best plans, often fails to work in practice. Sanitary authorities advise 600 cubic feet of space for every animal, but the best cow house the writer has seen allows double this quantity, and it appears none too much. Where the climate will permit, there is no better plan than to let cows stand upon the ground, the clay or earth being packed hard and raised somewhat above the level around the building; shallow gutters behind the cows and a feeding floor in front of them. More durable floors, and quite expensive, are made of grouting and cement, or of brick on edge; but such are often damp and cold, causing rheumatism and other ailments, unless covered with a false floor of wood or provided with an unusual abundance of bedding. Box stalls are undoubtedly the ideal for cows as well as for horses; in a box 8 to 10 feet square a cow may be left untied, and if supplied with enough bedding she will keep clean and well, altho the stall is not cleaned out for months at a time. But such boxes for a large herd require too much room. Every cow should have her own stall, however, wide enough for

comfort of cow and milker, and well protected from the neighbors on either side; $3\frac{1}{2}$ feet width is little enough and 4 feet is better.

Ties

From the great variety of cattle ties one should be selected which combines, in greatest measure, freedom of movement, comfort, and cleanliness. There are serious objections to all stanchions; if some form of this device is insisted upon, let it be one which is so hung as to move a few inches in any direction. A desirable substitute for a stanchion is a wide strap or light chain around the neck, with a ring at the throat (this part to be always worn by the cow), and a snap, with a few links of chain, attached to an iron ring which moves freely upon a 3 or 4 inch post, fastened upright at the middle of the side of the feed box next to the cow. An excellent patented device consists of a flattened bow of metal or wood, shaped like a widely spread letter U, the ends hinged at the front corners of the feed box, the bow resting on the back edge of the box, and the neck strap

fastened to this bow at its middle; this gives much freedom of movement and causes the animal to move backward a little when it lies down and forward when it rises.

Pedigreed Stock

**PEDIGREED POLAND CHINA
HOGS & SHORT HORN
CATTLE FOR SALE. NOW
BOOKING ORDERS FOR
SPRING PIGS OF THE**

BEST KNOWN BREEDING

WHITE DENT SEED CORN FOR SALE

Booking orders for Barred Plymouth Rock Eggs & Mammoth Bronze Turkeys

**Stock for Sale at all times. Pedigree
Furnished. Write your wants to**

**C. H. SCHUTT
R. R. 1, Fairmount, N. Dak.**

ST. PAUL UNION STOCK YARDS CO., SOUTH ST. PAUL, MINN. Comparison of Receipts and Shipments of Livestock for October, 1914

Receipts						
Railroads	Cattle	Calves	Hogs	Sheep	Horses	Total Cars
C. R. I. & P.	337	147	2128	142	20	48
C. G. W.....	1144	263	5893	912	55	142
C. M. & St. P.	7332	928	19195	17712	101	648
M. & St. L..	1778	429	14686	1555	25	278
C.,St.P.,&O..	4225	918	23388	5210	103	528
C. B. & Q...	745	65	1604	876	.....	53
M.St.P.&S.S.M.	16177	2306	18383	7729	37	900
Gt. Nor.....	21775	3666	33490	135857	133	2017
Nor. Pac.....	18085	1864	11796	49829	57	1060
St. P. B. & T. ....	.....	.....	.....	.....	.....	.....
Driven In....	556	153	1003	43	26	.....
Total.....	72154	10739	131566	219865	557	5674
Inc. over 1912	5202	.....	53235	101807	311	1347
Decrease.....	.....	1448	.....	.....	.....	.....
Jan. 1 to date	335917	101901	949531	630817	4745	30302
Inc. over 1912	11215	.....	169886	200817	.....	4109
Decrease.....	.....	13213	.....	.....	251	.....
Av. Wts.....	757	217	216	77	.....	.....

Shipments					
C.R.I.&P.....	4036	70	.....	4044	 144
C. G. W.....	4294	206	304	7900	25 184
C.M.&St. P..	16056	149	16282	62205	173 970
M.&St.L.....	2960	117	.....	2635	 106
C.,St.P.,M.&O	10918	373	2085	21464	70 473
C.B.& Q.....	8214	55	14904	64181	 737
M.St.P.&S.S.M.	2335	74	82	13372	21 136
Gt. Nor.....	3783	116	.....	10324	47 149
Nor. Pac.....	3878	257	399	3267	78 132
St. P. B. & T. ....	.....	.....	.....	.....	.....
Driven Out ..	824	248	165	342	31 1.....
Total.....	57298	1665	34221	189734	445 3031
Inc. over 1912	2077	.....	16188	91983	217 538
Decrease.....	.....	1164	.....	.....	.....
Jan. 1 to date	242013	21046	221774	405902	3056 11984
Inc. over 1912	19436	968	36451	107524	 1374
Decrease.....	.....	.....	.....	.....	1780

BANNERMAN ARMY AUCTION BARGAINS

Saddles, \$3.00 up New Uniforms, \$1.50 up
Bridles, .50 " Army Revolvers, 1.65 "
Team Harness, 21.85 " Rptg. Rifles, 1.48 "
Loggins, Pair, .18 " Swords, .35 "
Tents, 2.85 " 7 Shot Carabines, 2.95 "
Colts Cal. 45, Revolvers, \$7.50 up Cartridges 1 ea.
Sp' field Mauser Sp'g Rifle 11.85 Cartridges 2 ea.
Army Breech Loading Rifle .98c. Cartridges 2 ea.
422 Large, new, CYCLOPHIA CATALOGUE. Over 5,000 illustrations. BEST BOOK PUBLISHED ON FIRE WEAPONS mailed for 2c. stamp.

Francis Bannerman, 501 Broadway, New York City

WANTED—Men and Women to introduce new line Patent Pension, Ball-Bearing, Fit-like-a-Glove Shears. Biggest sellers ever produced. Agents making \$5.00 to \$8.00 per day, full or part time. Best commissions or salary. Free particulars. Address quick, **IDEAL SHEAR & CUTLERY CO.**, Marine Building, Chicago.

Floor

An open, level feeding floor in front of the cows seems to be better than any form of boxes; if boxes are used, they should be as large as possible and yet have every part within reach of the cow as tied, and they should be so constructed as to be easily cleaned. A manure gutter behind the animals aids in cleanliness, but while it should have good width—16 to 24 inches—it should not be too deep; if enough to hold the droppings of a night, that is sufficient. "Self-cleaning" stalls and gutters have not proved successful.

Length and Care of Stall

The length of stall from fastener to gutter should suit the size of the cow; it is bad practice to have them so long as to induce filthy udders and legs, and also to have them so short that cows stand habitually with hind feet in the gutter. Arrangements should be convenient for removing the manure and for supplying absorbents for the urine, and a part of the bedding. Liberal use of land plaster about the gutters and the floors over which the cattle pass is very desirable as a disinfectant and conservator of ammonia. Lime should be used with equal freedom as whitewash on the walls of the cow house, but not on its floors.

Light and Air

The stable should be provided with windows to admit light and air abundantly, and arranged to let sunlight as nearly as possible into every portion of the apartment where the cows stand during some hour of every clear day. Yet the windows should be shaded when desired, and they should be fixed to open partly without subjecting the cows to direct drafts of air.

Water

The extremes in providing water for the cows are to be avoided. A long walk to get water, in all weather, is certainly objectionable. And all the devices for keeping water constantly before every cow, or supplying it at the stalls, at will, are open to serious objections. Some medium course is advised, and the best plan seems to be to provide one or more tanks in the yard and one or more in the stable, at each of which but one cow should drink at a time. These should fill quickly after use and freely overflow, that every cow may find the surface fresh and clear. The evidence is conclusive that water for milking cows should not be too cold, and that it is profitable to bring water in severely cold weather to a temperature of about 50 degrees F., if it can be cheaply done. Warming to blood heat has not been found advantageous.

Exercise Yard

Attached to the cow house should be an exercise yard for the daily use of cows during the stabling season. Roomy, open sheds should form a part of this inclosure, and the whole may well be roofed over, if arranged for the free circulation of air and for admitting sunshine to a large share of it, while excluding wind and storm.

Accident and Sickness

There are many of the ordinary accidents and ailments to which domestic animals are subject which can be managed by an intelligent owner, or under his direction, without professional assistance. "Every man his own cattle doctor" is a very delusive title; one may well follow this suggestion within reasonable limits, but there is always a point hard to define at which professional aid should be promptly summoned. So long as an owner is certain as to the difficulty,

and has knowledge and experience as to treatment or remedy, he may depend upon home resources. But in a case of obscurity, uncertainty, or complications, the owner of a good cow disregards his own interests and his moral obligations if he fails to summon a veterinarian, as much as if he

IF YOU WANT

ANGUS CATTLE
OXFORD DOWN RAMS
EMBDEN GEESE
WHITE
HOLLAND TURKEYS
BLACK RABBITS

GET OUR EXPRESS-PAID PRICES

WILLOBANK FARM, LARIMORE, N. D.

W. F. JACOBS Livestock Auctioneer

Thoroughly Posted on Pedigress

Terms Reasonable LISBON, N. D. Write for dates

ST. PAUL UNION STOCKYARDS CO., SOUTH ST. PAUL, MINN. Comparison of the Origin and Disposition of Livestock for October, 1914

Origin of Livestock Received						
States	Cattle	Calves	Hogs	Sheep	Horses	Total Cars
Minnesota...	27398	7575	93577	18233	92	2387
Wisconsin....	6707	1548	13853	6795	9	496
Iowa.....	177	67	367	.....	111	19
Far South....	162	4	24	.....	68	7
So. Dakota..	4368	165	6902	3015	89	282
No. Dakota...	19339	930	16781	26512	168	419
Montana.....	9697	434	62	161884	.....	1204
Far West....	.....	.....	.....	2957	.....	12
Manitoba&NWT	3902	15	.....	.....	.....	133
Far East....	.....	.....	.....	.....	.....	.....
Returned....	404	1	.....	469	20	15
Totals...	72154	10739	131566	219865	557	5674
Disposition of Livestock						
So.St.Paul Pkrs	17860	5667	97622	34669	.....	.....
Cy.&St. Butch	956	60	2134	358	.....	58
Outside Packers	318	.....	29438	6745	.....	319
Minnesota...	13917	649	706	27779	809	549
Wisconsin....	3431	75	.....	5788	45	141
Iowa.....	9648	333	304	14270	48	360
Nebraska....	283	.....	.....	.....	.....	7
Kans.&Mo...	176	.....	.....	501	.....	5
So. Dakota..	3482	146	.....	682	1	100
No. Dakota	3040	149	.....	1310	.....	90
Mont. & West	2661	69	.....	.....	.....	63
Far South...	163	.....	.....	.....	.....	5
Manitoba&NWT	.....	.....	.....	1195	.....	5
Mich.&E. Can.	29	.....	.....	.....	4	6
Chicago.....	14130	119	775	125388	.....	1120
Ills.(ex Chicago)	3878	63	.....	1649	.....	143
Eastern Points	842	1	541	3629	118	45
Returned....	404	1	.....	440	20	15
Totals...	57298	1665	34221	189734	445	3031

neglected to secure proper medical service for a sick child. And the veterinarian should be selected with the same care one exercises in choosing a family physician.

Environment

Close confinement, with impure air and lack of exercise, is as prejudicial to the health of milch cows as to that of human beings. Some recently promulgated theories of dark, warm stables and no exercise for profitable milk production are without rational basis and certain to lead to disastrous results sooner or later. Exposure to storms and cold is equally injurious to the health and profit of cows. A judicious mean is the provision for moderate exercise in the open air and sunshine, and the application of the same common-sense care for the comfort of cows which one would approve for members of his own household.

Feeding Hay and Grain

The calf here referred to is not supposed to be for veal, but to be raised for a dairy cow. The foregoing treatment should be accompanied by early lessons inducing it to eat sweet hay and a little grain. The sooner it learns to eat hay or other rough forage and the more it eats, the better; but keep up milk feeding as long as possible, if only once a day. Grain should be used sparingly, oats and bran preferred, perhaps a little linseed, and always to judiciously supplement the other food. Do not turn it onto grass too soon. If a spring calf, carry it over to the second summer without pasturage. A fall calf will be in good shape to get its living from pasture during its first summer.

Fall Calves

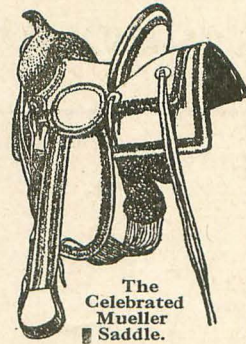
Fall calves are generally better cared for, thrive better, and make better cows than those dropped in the spring; another reason for having cows calve in the autumn. The writer feels certain of getting better results, in the end, from raising four calves dropped at the season advised than from five born in the spring, and is inclined to make the comparison stronger.

Feed for Young Stock

From the time milk ceases to be the main food of the calf until the heifer drops her first calf (at which

time she becomes a cow, if ever, regardless of age) the feeding of the animal should be with a view to nourishment and growth, without accumulation of flesh. When pasturage is good, after the calf is 6 months old, there can be no better food; if grass is short or dry and growth slackens, supplement with clover hay, wheat bran, or oats. At other times let the food be mainly the coarser and more bulky kinds of forage; the digestive apparatus needs to be developed and become accustomed to working up large quantities of food. A big belly may result, but no matter. If accompanied with a well-sprung rib, a strong back and loin, depth of flank, and other marks of constitutional vigor, a big belly is to be desired, indicating capacity as a feeder and user of feeds. Give long forage, fodder, or "roughness" the preference with young stock, and use grain sparingly as needed to balance the ration and promote growth and thrift. A fall calf, well bred and healthfully grown, should "come in" when just about 2 years old, and ought to make a good cow.

A\$45 Saddle,\$32Cash



Our latest Swell Fork Saddle, 14-inch swell front, 28-in. wool-lined skirt, 3-in. stirrup leather, 3/4 rig, made of best oak leather, guaranteed for ten years; beef hide covered solid steel fork.

THE FRED MUELLER
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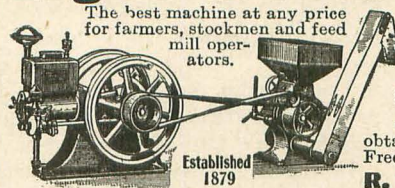
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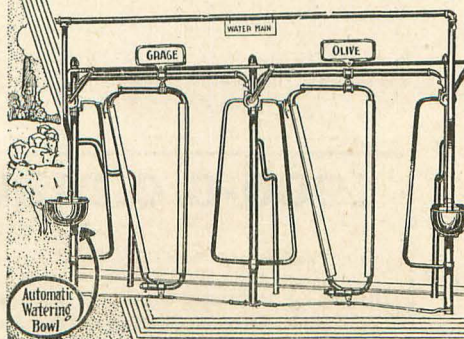
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Poultry Department



POULTRY

Mrs. G. W. Randlett, N. D. A. C.

Begin now to get things in snug condition for winter. Be careful that you do not take the young stock from airy coops and shut them into winter quarters that are warm and tight. Let them have plenty of fresh air but no draughts. Do not have too many windows as they make the houses hot during the day and cold at night. Remember the birds have on their new coats and are not in need of so much warmth. Damp and wet are far worse for fowls than cold, and hens are often kept from laying on account of poor houses. This time of the year a change to damp and cold will often give colds that will perhaps lead to a case of roup during the winter. Keep the house clean, warm and dry, disinfect often and much will be done to prevent disease. Warm and dry quarters are necessary for the birds that are not thru with moult.

Do not keep the cockerels intended for market too long as the price is going down as it nears November and the turkey has the right of way.

The cockerels to be sold for breeding purposes are being culled rapidly. Get your orders in early.

If you have a number of cockerels on hand and they fight a great deal put an old cock in with them. He will settle the scraps and be proud of his job.

Be on intimate terms with your poultry. Pick them up occasionally. They will lay better if you treat them in a sociable manner.

If you have a mongrel flock why not select the best of the females and purchase a strong, vigorous, pure-bred male to mate with them. It will increase the value of next year's flock 25%.

Some of the best birds that will be shown at the shows this season have been raised on the farm. The farmer can let them have free range and a variety of food, both of which are valuable in the production of shape and color.

Early hatched pullets, or yearling hens that have moulted in season; airy houses without too many glass windows and no draughts; plenty of litter to keep the fowls busy scratching; a good supply of fresh air; clean water, shell and grit; and all this mixed well with a whole lot of human

kindness is a simple recipe for getting eggs this winter.

Bank the houses to keep them free from draughts and keep enough litter on the floor to keep their feet warm and to give them plenty of exercise scratching for their morning feed. The circulation of blood is very active thru a hen's foot and she cannot make her food into eggs if it takes too much of it to keep her feet warm.

The weather seems to have the same effect on poultry as it does on people. On gloomy days if the flock seems to be moping around give them a good feed of something they like and it will brighten them up.

MONEY-MAKING DUCKS

Michael K. Boyer

Of all the varieties of ducks officially recognized by the American Poultry Association, the Pekin stands at the head as a money-making market bird. In fact, on the largest duck farms in America it is exclusively used.

The English poulterers prefer the Aylesbury variety, while the Frenchman pins his faith to the Rouen.

In the early days of duck farming in this country the Muscovy was the exclusive bird, but the advent of the Pekin has put that breed out of commission as a ranch breed.

The only breed of ducks that can lay claim to being strictly American is the Cayuga, but, strange, to say it is a breed that is not generally acceptable by the American poultrymen. It is the smallest of all the market ducks, but it matures early and furnishes fine meat. The objection, however, is that it is a black-feathered bird, and consequently a dressed carcass is very unattractive principally on account of the presence of black pin feathers. This same objection has made a handicap to the Rouen duck in this country. The Aylesbury is a white-feathered duck, but is not popular with us for the reason that it has nothing to offer that the Pekin does not supply in a greater degree.

The Indian Runner is a breed that is peculiar in its make up and habits, and is also a profitable bird. In laying it is to the duck family what the Leghorn is to the chicken world. It is small, slim, and racy-looking, having a long neck and a very upright carriage. It is known as a year-round layer, stopping only to complete its molt. The young duck will often start laying at five months of age. As broiler ducks they are not as profitable as the Pekin, owing to their small size, altho one breeder says he has secured as high as four and a half pounds weight in eleven weeks. Such a weight, however, we are inclined to believe is a rare case.

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QUALITY—UTILITY—EXHIBITION

Single Comb Rhode Island Reds, Barred Plymouth Rocks, White Plymouth Rocks, Light Brahmas, Buff Wyandottes.

BIRDS OF HIGHEST QUALITY: Winners in the following shows 1913: Minneapolis and St. Paul, Minn., Fargo & Valley City, N. D. Mating list free. WOLVERTON, ROUTE 1, MINN.

Some years ago several of the large duck farms (James Rankin among them) conceived the idea that it would be profitable to outcross the Pekin with some other breed, believing that an infusion of foreign blood would mean better maturity and probably a more attractive carcass.

James Rankin, at that time termed the "Duck King of America," made a number of tests in crossing different varieties of ducks, and, in 1894, in a letter to the writer said that he had about made up his mind before the trial that the best bird would be a cross between the Aylesbury and Pekin, and as he had two fine imported Aylesbury drakes he selected a dozen of his largest Pekin ducks for the cross, and confined them for the season, giving them the best of feed and care. So confident was he of the good results of the cross, that every egg those birds produced was carefully treasured and regularly placed in the machine every seven days, the balance of the trays being filled with Pekin eggs.

Those eggs hatched remarkably well, nearly every egg producing a strong, healthy duckling, so that he had during that season quite a sprinkling of flesh-colored bills among his flock of Pekins. The mortality was

very small, not more than one per cent, but when a duckling did die, he found it was sure to have a flesh-colored bill. As the birds grew he noticed that the crosses did not hold their own, but were perceptibly smaller, while every runt or scrub in the flock always wore a light-colored bill. Visitors marked the difference, and inquired if they were of the same age. He always began marketing the Pekins first and the crosses last, as he found they required more time to mature. The difference in weight was in favor of the Pekins—fully one pound to the pair. His pickers complained bitterly of the crosses, as the skin had a habit of coming away with the feathers, materially lengthening that process and cutting down the receipts. Wishing to ascertain the quality of the flesh, he at different times sent in boxes of the dressed birds by themselves, interviewed dealers on the subject, requesting them to inform their customers of the fact, and if there was a difference in quality to note it. The reply was that one was just as good as the other, but they preferred the Pekins because they were larger. The result of that experiment was a loss to Mr. Rankin of over fifty dollars, as he sold over 200 pairs of the crosses.

In his trials of Rouens he used pure bred birds, and tho the Rouens ran as heavy as the Pekins when mature, yet they were not more than three-fourths as large when nine weeks old, and it required twelve weeks to make them as large as the Pekins at nine weeks. Besides he found them more delicate to rear, and when confined in large numbers they cannot rough it with the Pekins. The color of the skin was against them.

He was best pleased with a cross obtained from Cayuga drake with Pekin ducks. It made a fine, plump bird, matured as early as the Pekins, was as large, and the only drawback was the color of the skin, which was worse than either of the other breeds.

Now these experiments of Mr. Rankin are pretty conclusive, in part they have been born out by other duck farmers. There is nothing gained by getting away from the Pekin in its purity.

According to statistics the average number of eggs laid by each hen in this country foots up about five dozen. This is counting the good, bad and indifferent. But if the statistics were taken from poultry farm reports exclusively, the average would be ten dozen. The average farmer is careless with his fowls, and does not, as a rule, gather all the eggs the hens lay for the reason that in their free range

they have hidden nests and the eggs in consequence are often lost. With the improved methods of breeding, the average with the poultry men will in a few years run as high as 150 eggs per hen per annum. Individual records have been reported that are fast soaring up to the 300 mark, but it is very doubtful if they will ever get near it, for a hen must have a sufficient number of days to molt, and the calendar gives us but 365 days in the year.

BRED TO LAY

And prize-winning strain. Barred Plymouth Rocks, White Orpington Indian Runner Ducks, Silver Spangled Hamburgs; Single Comb White and Brown Leghorns. Stock and Eggs at Reduced prices.

F. C. MITCHELL CROOKSTON, MINN.

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Rose Comb Red Cockerels for \$1.50; and Fawn and White Indian Runners, \$2.50 per pair, if taken now.

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White and Columbian Wyandottes, Light Brahmas, and S. C. White Leghorns Over 30 years a breeder. Stock and eggs for sale. Michael K. Boyer, Box 27, Hamonton, New Jersey.

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Twenty Varieties Pure Bred Chickens, Ducks, Geese, Turkeys, Northern raised, fine plumage and 500 prizes to their good. Lowest prices on stock and eggs. Manufacturers of the Blue Ribbon Incubators and Brooders.

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HATCHING EGGS of the Leading Strains and of the Prize Winning kind. Mammoth Bronze Turkeys, 12 Eggs \$1.50. Barred Plymouth Rock 15 Eggs, \$1.50; 50, \$3.00; 100, \$5.00. SEED CORN FOR SALE. Write all orders to C. H. SCHUTT R. R. 1 Fairmount, N. D.

ELEVEN YEARS A BREEDER

Pure-bred poultry: White Wyandottes, Toulouse Geese, Bourbon Red Turkeys and Pearl Guineas. Stock for sale. Write me your wants.

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EGGS FROM BUFF ORPINGTONS AND S. C. RHODE ISLAND REDS at special low prices Bred to lay. F. M. PEZALLA, Cayuga, N. D.

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If you want Quality write

Enoch J. Peterson, Alexandria, Minn.
Formerly Peterson Bros., Harwood, N. D.

HAUSMANN POULTRY FARM
Breeder of W. Wyandottes and S. C. W. Leghorns
Hillsboro, - North Dakota

WHITE WYANDOTTES. If you want eggs from an early maturing, heavy laying, prize winning strain of White Wyandottes write me. I am developing a special laying strain by use of the trap net. Prices reasonable. Write
M. C. JAMES, Valley City, N. D.

MAKE YOUR HENS LAY MORE EGGS

I have a method that will make your hens lay every day; it never fails. Write for it. 2c stamp.
MRS. B. F. WILCOXON,
North Platte, Neb., Dept. 8

FOR SALE. M. B. Turkey Toms, raised from our Diploma Stock, \$5.00 and up; also Eggs from 26 varieties poultry. Catalog free.
L. GULDEN, Osakis, Minn.

MAKE MONEY WITH POULTRY

AMERICAN POULTRY is a magazine devoted entirely to helping earnest men and women make a financial success of poultry raising. Its staff of writers is composed entirely of those who have made a practical, instead of theoretical, success of poultry farming, and who are glad to pass on the results of their hard-earned experience to AMERICAN POULTRY readers.

There are many pit-falls in the path of the novice which may be entirely avoided by those who will follow the teachings set forth in this magazine. It fully explains how to make a start, how to construct houses, coops, and other devices, how to get a large egg yield, how to cure and prevent disease, how to exhibit, how to get the top price for eggs, how to use incubators and hundreds of other points which everyone wishes to know. It explains the famous secret system through which poultrymen have become rich and afterwards sold for hundreds of dollars.

AMERICAN POULTRY is a large, handsomely illustrated, monthly journal, well printed on fine paper, and should be found on file in the home of every poultry lover. No beginner in the poultry business should think of being without it. It will save him many times the small subscription price. The advanced poultryman will also find it of great value; the articles being varied in their scope.

SPECIAL OFFER. The regular price of AMERICAN POULTRY is 50c per year, but in order to introduce it to several thousand new readers, we will, for a short time, give a large 200 page poultry book, which is a complete guide in the poultry business, absolutely free to everyone sending 50c for a yearly subscription or \$1.00 for a three year subscription to AMERICAN POULTRY. A trial six months' subscription (without book) will be sent for 25c. Never has so much been offered for so small a sum. Advantage of this offer should be taken at once.

American Poultry
Savoy Bldg., WILKES-BARRE, PA.

School and Home

ELEMENTARY AGRICULTURE

THE ACRE-YIELD CORN CONTEST

We take pleasure in publishing the picture of Master Henry F. Granlund who succeeded in winning first prize in the southern section and sweepstakes' prize in the state of North Dakota at the recent corn contest, which was under the auspices of the Better Farming Association.

In conversation with the writer, the father of the boy made the statement that he believed he himself might have produced a little heavier yield, but Henry was determined that every particle of the work should be done by himself.



Henry F. Granlund, DeLamere, Ransom County, North Dakota.

We most heartily congratulate young Henry on his success and we would also commend the work of the Better Farming Association, the First National Bank of Fargo, W. C. McDowell, of Marion, and Ex-Gov. E. Y. Sarles, for making it possible for these young men to demonstrate to their fathers and the skeptical in other states the possibility of not only raising corn in North Dakota but in producing yields that compare favorably with many of those of older corn states. The fact that Dakota White Dent produced 106.8 bushels, of which practically every pound matured, places this variety in the front rank. By winning first honors a second time Ransom County demonstrates its claim to being the banner corn county of the state. We give elsewhere the list of winners and their yields and prizes.

Miss Ura Leader,
Ruraldale, N. D.
My dear Miss Leader:

I am very sorry to inform you that Prof. Randlett was called to Washington, D. C., on important business and at this writing he has not returned. Altho we have held the forms open for several days waiting for the monthly letter, we have been compelled to go to press without it.

I am sure you are as disappointed as I am, for his letters are so helpful to us in our work in Elementary Agriculture. In the place of Prof. Randlett's letter I am publishing additional material to be used in this month's work.

His next monthly letter will treat of insects and plant diseases for the seventh year and dairying for the eighth year. I am sure Prof. Randlett will have some valuable hints for you and the coming farmers of the state.

Begging your kind indulgence for this omission and wishing you unbounded success in your laudable work of teaching the boys and girls of the state one of the most essential branches in the whole curriculum, I remain

Yours cordially,
THE PUBLISHER.

THE YOUNG CALVES

Handling and feeding calves

Among dairy cattle the best practice is to remove the calf from the cow within twenty-four hours after its birth and at once teach it to drink. This separation may be delayed until the dam's milk assumes the normal condition, but as a rule the earlier the calf is taken in hand and its feeding regulated the better for the calf. The younger it is the easier it learns to drink. It is also better for the dairy cow to be regularly milked by hand than to suckle a calf. The milk of good cows is often too rich for their calves, and the latter are apt to take too much if left to help themselves. The calf should have the milk of its dam or some other fresh cow, and receive it while warm, and at least three times a day (preferably four) for a week or more. During this time, if the milk is rich, it should be diluted with warm water one-fifth to one-third its own bulk, according to the richness, or the milk may be kept a few hours, the best of the cream removed, and then warmed and fed. To make a good calf, three feedings a day should be kept up for a month or six weeks, and the milk should be fed warm for a longer period, especially if the weather is cold. But after ten days or so milk set twelve hours and lightly skimmed will do, and after ten

days more the skimming may be gradually made closer, until at the end of a month or soon after, a skim-milk diet is reached. No rule can be given for quantity in feeding calves, they differ so much in size and food requirements. Judgment must be used, the feeding effects observed, and the calf given enough to thrive and be active, but not too much. More calves suffer from overfeeding than from scant diet. Keep the calf a little hungry and eager for more rather than fill it to dullness. The endeavor should be to prevent the beginning of indigestion, which leads to scouring and perhaps fatal diarrhea. Nothing causes indigestion sooner than overfeeding or irregularity in the quantity, time, and temperature of the milk, especially while the calf is young; and absolute cleanliness about the feeding vessels is essential, with frequent scalding. If it can with certainty be kept equally clean, some feeding device which compels the calf to suck its milk instead of swallowing rapidly is preferable to the open pail; but, all considered, the latter is usually the best utensil. If gritting the teeth or other symptoms of indigestion appear, a little lime water in the milk or a little baking soda will usually prove a correction. Keep the calf dry and clean, fairly warm, but in pure air, and allow it to exercise. If its box is small, turn it daily into a covered yard or small paddock. Young calves like company, but if kept together are likely to learn bad sucking habits. Every calf had better have its own

box until a month or two old, and then be tied up out of reach of neighbors; but several may exercise together if not turned out until an hour after taking milk.

CLIPPING THE HORSE C. H. Barnes, Col. A. C. DECEMBER—EIGHTH YEAR

The subject of clipping the horse is a matter of considerable discussion at this time of the year. The following suggestions may be of benefit to those who are contemplating clipping their horses: In the first place, never clip a horse that has a fine coat of hair, as it will then be necessary to clip it every spring and fall thereafter. The only horses that should be clipped are those with heavy coats, that can be cared for during the winter, such as blanketing warmly in the stable and covering with a canvas sheet during severe storms while at work. The advantage in clipping a horse is that the long-haired horse, after sweating profusely, will not dry off during the night. This condition will cause the horse to take cold, the inflammation being located in the nose, throat, or lungs. It would not be a good policy to clip a horse and then turn it out to a straw pile for the winter. Clipped horses should never be allowed to stand uncovered, as they chill quickly. A clipped horse dries off readily, mud is easily removed from the legs, and there is no disagreeable hair flying during the pe-

riod of shedding. In the fall clip as soon as the flies do not bite the animal, while in the spring, clip before the horse begins to shed.

TWO QUERIES ANSWERED

In preserving vegetables, how long should they be cooked?

If this question refers to canning vegetables the cooking process depends upon the kind of vegetables and the process used in canning whether it is intermittently sterilized or continuously for a given period. Time varies from ten minutes to four hours according to the kind of vegetables and the processes used.—Minna A. Stoner.

How deep is it necessary to lay water pipes to avoid freezing?

It depends entirely on climatic conditions as the required depth a water pipe should be laid underground. This depth is determined by practice in any community and will vary with degree of risk an individual is willing to assume. During the extremely cold weather of 1896-7 a great number of water pipes were frozen in the northern states because the ground froze to a much greater depth than usual. The practice in the city of Fargo is to lay 6-inch water pipes so as to be covered to a depth of seven and one-half feet. It is probable that the ground will not freeze beyond a depth of six feet but in exceptionally cold weather the frost may extend deeper.—E. S. Keene.

All Copper Reservoir-Heats Like a Tea Kettle

Be Sure To Note This Feature When Ordering a Range
Look at the *Majestic* All Copper Removable Reservoir. It heats like a tea kettle by means of a copper pocket (drawn from one piece of copper) setting against the left hand lining of fire box. Boils 15 gallons of water in a jiffy—simply turning a lever moves frame and reservoir away from fire. This is a patented feature which can only be used in the

Great Majestic

Malleable and Charcoal Iron Range

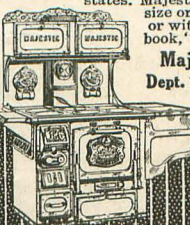
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Put together with rivets—joints absolutely tight, no heat escapes, no cold air enters. Body lined with pure asbestos board, covered with iron grate—you can see it—insuring a dependable baking heat with half the fuel required in ordinary ranges.

ONLY range made of malleable iron and charcoal iron. Charcoal iron WON'T RUST LIKE STEEL—malleable iron can't break. Outwears Three Ordinary Ranges. Contains greatest improvement ever put in a range—increasing strength and wear of a Great Majestic more than 300 per cent at a point where other ranges are weakest—many other exclusive features. If you would be absolutely sure of complete satisfaction—don't buy from printed descriptions—see the *Great Majestic*, compare it, point for point, with any other range. For sale by dealers in nearly every county in 40 states. Majestic dealers furnish any size or style *Majestic* with or without legs. Write for book, "Range Comparison."

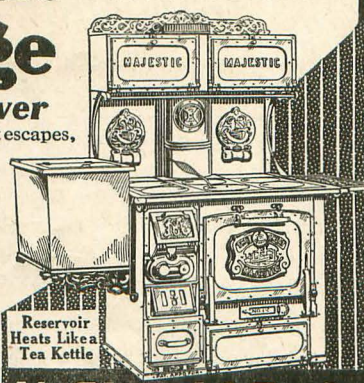
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Aluminum Top Reservoir



Aluminum Top Reservoir



Reservoir Heats Like a Tea Kettle

The Range with a Reputation

It Should Be In Your Kitchen

Acre-Yield Corn Contest Winners

Winners in Southern Section

Name and County—	Total Bushels	Total Matured	Prize Won
*Henry F. Granlund, Ransom.....	106.8	106.7	\$75
Noel Thorpe, Traill.....	92.55	92.55	50
Knudt Tideman, Richland.....	109.1	87.1	35
Oscar Tideman, Richland.....	86.1	85.8	25
B. Fay Heckel, Traill.....	84.0	83.4	15
Charlie Staiger, Ransom.....	80.63	80.63	10
Russel Beach, Stutsman.....	81.0	78.0	10
Raymond Dahlen, Cass.....	75.0	70.2	10
Arthur Hanson, Barnes.....	70.0	70.0	10
Harley Swanson, Richland.....	68.0	68.0	10
Lester Schram, Ransom.....	66.0	66.0	10
Charles Parks, Stutsman.....	69.6	65.7	10
Harold Ness, Richland.....	65.5	65.5	10
Charles Geddes, Cass.....	73.32	65.4	10
Willard Geddes, Cass.....	71.0	65.1	10

*Sweepstakes prize of \$100 awarded, highest yield in entire state.

Winners in Northern Section

Name and County—	Total Bushels	Total Matured	Prize Won
Clemence Schatz, McHenry.....	96.2	96.2	\$75
Henry A. Hendrickson, Eddy.....	77.3	75.8	50
Bert Waldref, Ward.....	67.5	67.5	35
Henry Schmidt, Grand Forks.....	65.7	64.0	25
Edgar Raymond Bottineau.....	57.3	57.3	15
Roy and Martin Nelson, Grand Forks.....	57.3	56.8	10
Bennie Brand, Ward.....	53.4	53.4	10
Melvin Forthun, McKenzie.....	52.2	52.2	10
Henry Pankrantz, McHenry.....	61.4	52.2	10
Phillip Pickard, Nelson.....	58.0	50.8	10
Lyle Longnecker, Eddy.....	50.3	49.3	10
John Frank, Ward.....	47.6	47.6	10
Harvey Longnecker, Eddy.....	47.1	46.4	10
Joseph Spaulding, Rolette.....	46.7	45.3	10
Joseph and Lawrence Stedwick, Ward.....	46.6	45.2	10

LEGUMINOUS CROPS FOR GREEN MANURING

DECEMBER—SEVENTH YEAR

Green Manuring

By C. V. Piper, U. S. Farmers'
Bulletin

Green manuring, or the plowing under of green crops, is one of the oldest methods used to maintain or to increase the productivity of the soil. The effect of green manuring varies according to the original character of the soil. In general, sandy or gravelly soils are made darker in color and become more retentive of moisture. Clayey soils are made more porous and friable, so that they are less likely to puddle or bake, and are less subject to washing. Loamy soils are less noticeably affected than others.

The most important object achieved by green manuring is the addition of humus to the soil. Other things being equal, the best green-manure crop is

that which furnishes the largest amount of material which will readily decay in the soil and thus form humus.

The Use of Green Manures

Green manuring as a definite farm practice can be recommended only under certain conditions. It is profitable in upbuilding poor soils and in improving the physical condition of sandy, clayey, and adobe soils. Where red clover or alfalfa can be used in rotation the need of a special green-manure crop is seldom felt. The reason lies in the fact that about one-third of the weight of the clover plant and nearly one-half of that of alfalfa is in the root, so that these plants virtually produce a green-manure crop under the ground in addition to the regular crop of hay. Sweet clover is another plant of this class and of wide adaptation as to soil and climate, but unfortunately the hay is not readily eaten by cattle, so that it is used in limited sections only.

The Principal Leguminous Crops

There are in the United States 15 leguminous field crops that are more or less extensively grown. In the approximate order of their importance they are as follows: Red clover, alfalfa, cowpeas, alsike clover, crimson clover, white clover, Canada peas, soy beans, peanuts, vetch, velvet beans, Japan clover, and bur clover. A few more are cultivated to a less extent, as sweet clover, beggarweed, grass peas, fenugreek, and horse beans. Many others have been tested in an experimental way, but as yet are not grown as crops.

Each of these crops can be grown advantageously only in a more or less definitely limited region. For the particular purpose in view, it rarely happens that a choice of two or more equally valuable legumes is offered. Usually one is so much superior to any other available that substitution is practically out of the question. In a few cases, however, the use of one legume in place of another is practicable. Thus cowpeas and soy beans are agriculturally much alike and are adapted to nearly the same regions. In a like manner crimson clover, bur clover, and the vetches over a large area may be used one in place of another. In some sections the culture of red clover is no longer profitable, principally owing to diseases. Alsike clover has been used to some extent as a substitute, but the yield is ordinarily much less. There is also an increasing use of alfalfa in place of red clover, but with alfalfa the best practice is to keep the fields in this crop three years or longer.

How Legumes Get Nitrogen from the Air

It was known even in ancient times that much larger crops of various kinds could be produced on land that had been in clover or lupines the previous season.

In modern agriculture the value of legumes is quite generally appreciated, as seen in the common practice of growing clover or some other legume in rotation at frequent intervals. The reason why legumes have a beneficial effect was discovered by Hellriegel and Wilfarth in 1886, tho many accurate experiments had long before proved the fact.

On examination of the roots of leguminous plants will reveal on many of them nodules or tubercles; sometimes very few, sometimes very many. These vary in size and shape according to the kind of plant. Thus, on red clover they are more or less round, and quite small; on the cowpea they are also round and nearly smooth, but much larger; on the vel-

vet bean they may even reach the size of a pigeon egg; on the vetches they are irregular, both in shape and size. The differences in the tubercles are such that in many cases it is possible to determine the plant to which the root belongs.

Inoculation

Nearly every legume has its own particular strain of nodule bacteria. For example, that of the clover is different from that of alfalfa, and that of the cowpea distinct from that of the soy bean. In planting a legumi-

nous crop for the first time it will therefore often happen that no tubercles will form on the root, because the proper kind of bacteria is not present in the soil. These may be supplied by scattering soil from a field where the crop in question has been recently grown, or by using an artificial culture of the proper bacteria. After the field is once thoroly inoculated there is rarely any difficulty afterward in getting an abundant supply of root tubercles.

Sources of Soil Nitrogen

Nitrogen, as purchased in commer-

cial fertilizers, such as nitrate of soda, guano, tankage, and dried blood, is the most expensive manurial substance a farmer has to buy. Its cost in these various forms ranges from 15 to 20 cents a pound. To a very large extent, at least, the purchase of the costly nitrogenous fertilizers can be avoided by the growing of green-manuring crops, especially legumes.

There are two principal ways in which nitrogen is naturally added to the soil. The first and much more important way is by means of legumes. This takes place only when

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If you will figure the value of your rubber footwear according to the *cost per day's wear*, "Ball-Band" becomes the cheapest you can buy.

Look for the Red Ball

—the "Ball-Band" sign. It's in the windows of 45,000 honest dealers and it's on the goods—if the Red Ball is not on the goods you are not getting "Ball-Band" Quality.

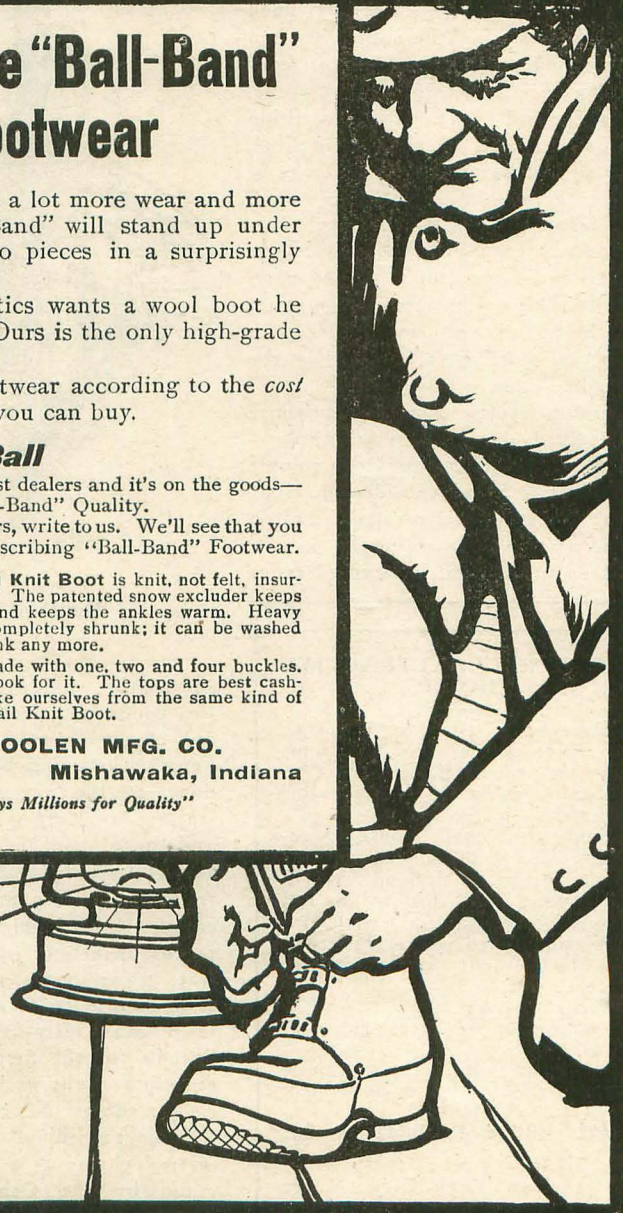
If your dealer is not one of the 45,000 "Ball-Band" dealers, write to us. We'll see that you are supplied. Write anyway for Free Illustrated Booklet describing "Ball-Band" Footwear.

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the roots of the leguminous plant bear bacterial nodules or tubercles. The amount of nitrogen that any particular legume can add is directly proportional to the number and size of the tubercles on its roots.

Green Manuring Compared with Feeding

Barnyard manure contains from 75 to 100 per cent of the total fertilizing substance in the feeds used. It is beyond question a better practice from all standpoints to feed a crop, whether leguminous or nonleguminous, and then distribute the manure over the land, than it is to plow under the whole crop. This practice utilizes the whole feed value of the crop. Further, it returns an important part of it to the soil in a highly available form for plant food.

Crops to Follow Green Manures

The plowing under of large quantities of green herbage, especially when this is done during the summer, often brings about the formation of considerable acid, or, in other words, makes the soil sour. This condition may be corrected by the use of lime, which should be applied at the rate of a ton to a ton and a half to the acre. Some farmers claim to get much better results by applying the lime before plowing under the crop. In any case, it is advisable to let the green manure after being plowed under decay a month or more before planting the succeeding crop.

The full results of a green manure are obtained only after it is completely decayed and changed into a soluble form. This requires considerable time, so that the beneficial results are often shown for two or more seasons.

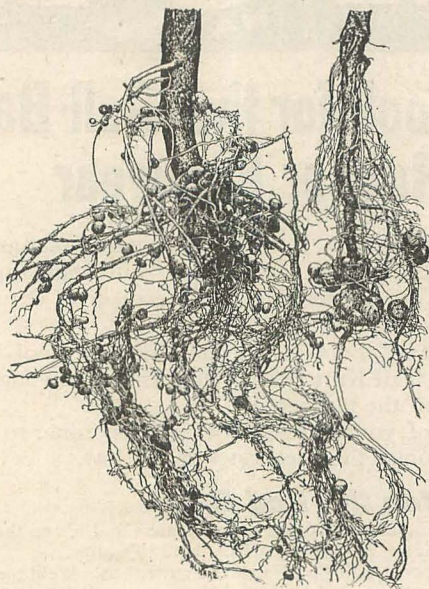
Generally speaking, cultivated crops

are the best to follow green manures. The tillage of such crops hastens the decay of the vegetable matter and, by aerating the soil, favors additional nitrogen fixation by the soil bacteria. Corn and potatoes, on most soils, derive great benefit when following green manures. Rye and oats are likewise good crops to use in this way. Wheat and barley give varying results, often very favorable, but not infrequently there is no increase or even a loss. This is especially true the first season following a green-manure crop.

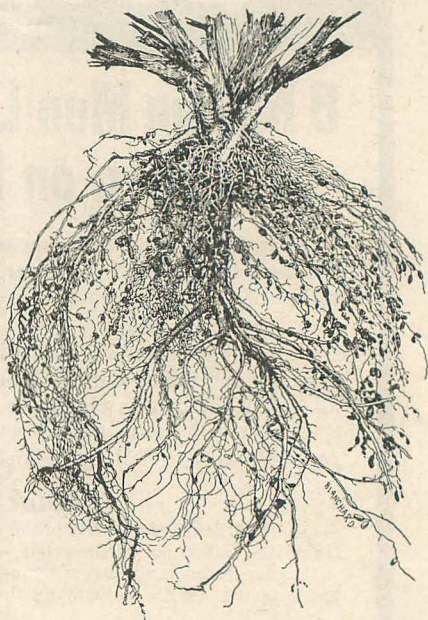
Red Clover

Red Clover is the most common legume used in rotations in the Northern States. It is usually grown with timothy, following wheat or other small grains. As a general rule the timothy seed is sown in the fall with the grain, and the clover is

ly been published. In one of these experiments four plats were planted to spring grains with red clover and four to the same grains without red clover. After the grain crops were harvested the clover was allowed to grow on the four plats, and having attained a good growth was plowed under in October. The remaining four plats without red clover were plowed at the same time. The following spring all eight plats were seeded to oats. Those that had been in clover yielded an average of forty-nine and nine-tenths bushels to the acre, against thirty-eight and four-fifths bushels for the plats that had no clover. All four of the plats that had been in clover showed an increase, the greatest being nineteen and two-fifths bushels and the least seven and one-fifth bushels. Without additional fertilizers the same plats were seeded the following year to barley. Those



Roots of Soy Bean



Roots of Red Clover

Note the Nitrogen Producing Nodules

sown the following spring. While the beneficial effect of plowing under red clover or red clover sod is well known there has been but little work done at the agricultural experiment stations to determine accurately the amount of benefit thus secured. Results obtained at the Illinois Agricultural Experiment Station gave an average yield of thirty-five and seven-tenths bushels of corn where this crop was grown year after year on the same land. In rotations, the average yield was fifty-five and one-tenth bushels for the first crop after clover and forty-eight and three-fifths bushels for the second crop after clover.

Some exceedingly interesting results on red clover as a green manure, secured by the Central Experimental Farm, Ottawa, Canada, have recent-

ly been published. In one of these experiments four plats were planted to spring grains with red clover and four to the same grains without red clover. After the grain crops were harvested the clover was allowed to grow on the four plats, and having attained a good growth was plowed under in October. The remaining four plats without red clover were plowed at the same time. The following spring all eight plats were seeded to oats. Those that had been in clover yielded an average of thirty-seven and three-fifths bushels to the acre, while the others yielded but 29 bushels an acre.

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This experiment furnishes a clear demonstration that the good effect of the clover lasts more than one season.

In another experiment oats were grown on four plats, following, respectively, brome-grass, mixed grass without clover, mixed grass with clover, and clover alone. The respective yields were thirty-three and one-tenth, thirty-six and three-tenths, forty-six and one-tenth, and forty-three and one-half bushels. The average of the two plats where no clover had been used was thirty-four and one-half bushels, while that of the two where clover had been used averaged forty-four and one-half bushels. The benefit derived from the red clover therefore amounted to ten bushels per acre more than was derived from the grasses.

Other experiments conducted in this same series showed very marked favorable results both to crops of fodder corn and potatoes following clover. In the case of corn the increase amounted to 40 per cent and in the case of potatoes to 28 per cent.

Soy Beans

Soy beans are adapted to a much wider range of climate than cowpeas, being grown successfully even in Ontario and Massachusetts. As a forage

crop soy beans have some points of superiority over cowpeas, the hay being somewhat easier to cure and richer in protein. The seed is also cheaper than that of cowpeas, usually costing only two-thirds as much. This is principally due to the fact that the seed can readily be harvested by machinery. It also has an advantage in that the seeds are but little affected by weevils. On these accounts soy beans are preferred by an increasing number of farmers in the South. Soy beans, however, are not able to compete with weeds as successfully as cowpeas, and on this account the best results are obtained by planting in rows, so that they may be cultivated. There is considerable difficulty experienced at first in obtaining tubercles on the roots of soy beans, but when once these have appeared in a particular piece of ground there is no further trouble. Apparently, soy beans have a greater power than cowpeas to absorb atmospheric nitrogen thru their roots.

In an investigation conducted at the Michigan Agricultural Experiment Station it was found that inoculated soy beans were enabled to add per acre 37.57 pounds of nitrogen provided from the air. At the Arkansas Agricultural Experiment Station soy beans used as green manure gave nearly as good results as cowpeas, as determined by subsequent crops of wheat, oats, cotton, and corn. With cotton, the soy bean vines produced a larger yield of cotton than cowpea vines, but the cowpea stubble gave a larger yield than the soy bean stubble. With corn, cowpea stubble and soy bean stubble yielded the same results, while soy bean vines gave better results than the cowpea vines. With oats, the results were slightly in favor of the cowpeas. It is not improbable that the variation in results may be largely due to variation in the amounts of atmospheric nitrogen added by the legumes to the different plats. Those that were most heavily tubercled would add the most nitrogen.

STORING OF WINTER VEGETABLES

DECEMBER—SEVENTH YEAR

Minna A. Stoner, Prof. Home Economics, N. D. Agri. Col.

The storing of winter vegetables is economical and desirable. In the fall enough vegetables go to waste from the average farm garden to supply the table during the entire winter. The task of storing is not difficult if one has a knowledge of the conditions

best suited for storage and is willing to perform a small amount of labor.

A dry well aired not too dark, frost-proof room, cellar or sodhouse will serve the purpose. The most favorable temperature is not over 50 degrees F. Celery, cabbage and sweet potatoes should be stored in the coolest part of the room. Racks should be adjusted on which to place the storage boxes or barrels. This avoids the dangers of over-heating, excess



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combine style, refinement, comfort and service to the highest degree.



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- 10—The address of seven syndicates in which you can start publishing a magazine of your own for \$1.00.
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moisture and prevents decay. All vegetables should be gathered before the frost, sorted, dried thoroly before packing. For long storing reserve those of most perfect formation and firm texture. Each root or tuber should be placed a few inches apart in alternate layers with clean, dry sand. In removing those for use, care should be taken each time to recover any that may be exposed. The earth for packing should be clean and dry, and should be collected in dry summer season rather than after the heavy fall rains. Carrots, sweet potatoes, beets, turnips, parsnips, cabbage, salsify, celery keep well stored by this method.

Vegetables less perfect in form, less firm in texture should be reserved for immediate use. These may be stored in barrels or boxes with latticed bottoms.

Sweet potatoes should be well dried, wrapped in paper, packed in sand as indicated, and kept in coolest part of store-room. Celery should be taken from ground on a clear day, transferred to boxes of clean dry sand. The tops and leaf portions should not be covered, but the bleached part should be well-packed in the sand and placed in the coolest part of the storage room. Cabbage and cauliflower will keep for a long time if gathered and stored with the head and roots intact. The large outside leaves should be removed. Each head should be surrounded with clean dry straw and placed downward a few inches apart. Pack and store the same as celery.

If desired, parsnips and salsify may be allowed to remain in the ground all winter. They should be covered in the fall with clean straw. After the early spring thaw they may be removed, washed and stored in a cool place.

Parsley and water-cress may be transplanted to flower pots or boxes and kept in good growing condition thruout the winter.

Tomatoes may be stored very late in the fall if the entire vine is carefully pulled up and hung over racks in the coolest part of the frost proof room or the fruit may be picked from the vines and placed on racks several inches apart. By these methods a large portion of the green tomatoes will ripen and keep indefinitely.

If a frost proof storage place is not available, the trench method is satisfactory for storing cabbage, turnips, carrots, parsnips, salsify, beets, etc. A well-drained location should be selected and the trench should be about 7 feet deep. Clean straw should be filled in to the depth of about one foot. The trench may be divided in

sections for each variety of vegetables. The cabbage should be arranged as previously mentioned. In filling the trench the earth should be firmly packed and well heaped. Two boards nailed together lengthwise to form a sloping roof should be placed over the top to shed rain and snow. Vegetables stored in a trench may freeze in a severe winter, and remain frozen until the spring thaw. The gradual extraction of the frost leaves the vegetables uninjured, but a sudden thaw will greatly impair the texture and flavor.

The cost of vegetables grown out of season in green-houses and available in all markets during the winter and early spring months is so high as almost to prohibit their use by people of moderate means, except as a luxury. Therefore, if more attention were paid in each home to the storage of a generous supply of winter vegetables the daily meals would be more easily planned, the daily diet be made more wholesome and one of the problems in the high cost of food supply would be practically overcome.

ANOTHER POTATO PEST MAY BE INTRODUCED

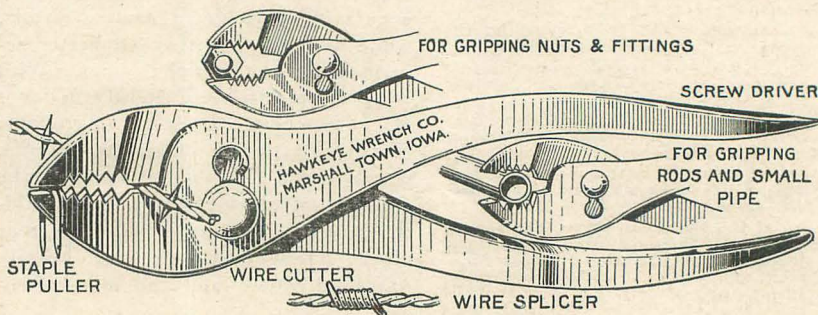
Potato growers in the United States are informed by the Department of Agriculture that it is hoped that a potato disease prevalent in parts of Europe and in Canada may be kept out of the United States by quarantine measures. This disease is known as "powdery scab."

The disease resembles the common scab, which is found widely distributed in this country, altho the two diseases are readily distinguished by several characteristics. Affected tubers first show rounded, blister-like spots, a sixteenth to an eighth of an inch in diameter. The skin over the pustules soon breaks, revealing a dark-brown, powdery surface composed mostly of spore balls which serve to propagate the disease. The spots later enlarge and deepen, and frequently coalesce, forming large areas of diseased tissue, which makes the tubers unsightly and greatly reduces their market value.

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North Dakota Farmer, Three Years	\$1.50
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Powdery scab is introduced into uninfected areas thru the use of infected seed potatoes. Altho practically unknown in the United States, traces of it have been found in one or two instances and it is important to maintain a close watch to see that it does not become established and further distributed.

This disease is reported to be widely prevalent in Ireland and Scotland, where there is this year a large crop of potatoes, which the growers would like to export to this country if they would be admitted.

A large mass meeting was recently held in Belfast, Ireland, to protest against the maintenance of the potato quarantine by the American Government, and resolutions were passed testifying to the freedom of the Irish crop from potato wart and suggesting that a representative of the Irish Department of Agriculture proceed to America to confer with Secretary Houston. They were, however, apparently under the impression that the quarantine was based entirely upon the wart disease, whereas the Federal Horticultural Board has also taken the occurrence of powdery scab into consideration.

A WINTER LIVING ROOM

Now is the time to fix up your home for the winter and a good place to begin is with the living room; the center of the house. The place where the family meets to discuss the day's work and plan for the work of the day to come; the place where the children study their lessons; the place where everything happens during the long winter evenings.

First of all then, a winter living room should be comfortable. If possible there should be two tables, one

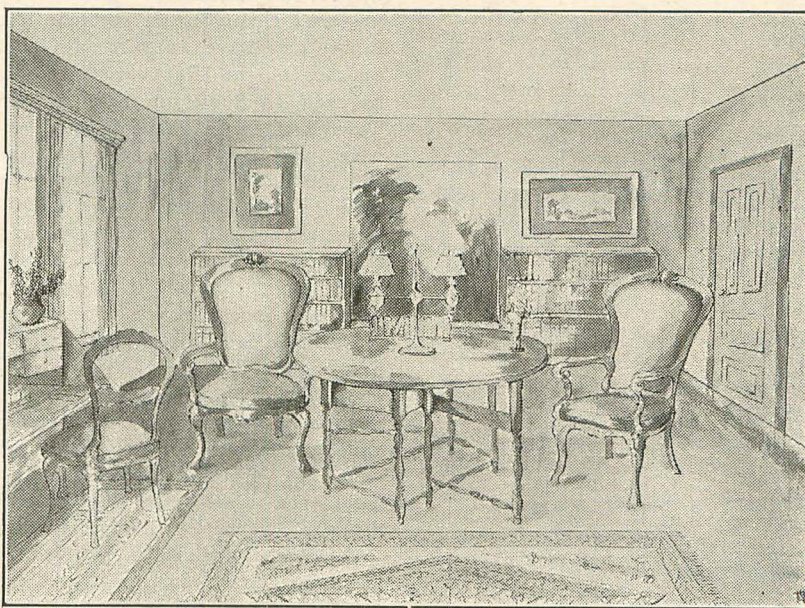
where the children study and one around which the older members of the family gather. On these tables there should be lamps that throw a strong steady light. The double-burner lamps are fine, but the standard oil lamps give just as good a light, use less oil, and cost about one-fifth as much. The bottle green glass shades are best for reading and studying.

The comfort of a living room is, as we have said, the first thing to be considered, but it is by no means the only thing. A living room should be cheerful, and restful, and beautiful. Its having these three qualities depends almost entirely on two things: Your wall paper and the creton you select for hangings and chair coverings.

well-fitting creton slip cover on it and it at once looks homelike and inviting. Even plain kitchen chairs have been made attractive by fitting creton covers over the backs and seats. The same thing is true of tables. They may be ever so ugly, but nobody knows it when you put covers on them. But the color of the covers must be chosen with care.

One thing that always adds to a living room is a book rack on the center table. It does not matter what it is made of. The thing that counts is having a line of books ready to the hand of anyone who wishes to read.

Rugs do of course make a difference, but less than one might think.



Suggestions for the Living Room

Let the walls be brown, or tan, or blue, or green, or even red. The color does not matter, as long as the shade you use is chosen with care, and the hangings and chair covers do not clash with it.

Beautiful results are not dependent on money. There is nothing more lovely than the ingrain papers in solid colors and they are very cheap. And inexpensive creton for hangings and chair covers comes in exquisite shades and designs.

For table covers select a plain color differing from the walls. It is well to choose a prominent shade in the creton. Never use figured paper and figured creton together. If you use a figured paper then keep your chair covers and hangings in plain colors.

The sort of furniture you happen to have makes very little difference. Any room can be made attractive thru the proper use of colors. Take any old battered up chair and put a

With rugs as with creton and wall paper, beauty is not dependent on cost. Grass and crex rugs are useful but not ornamental. Jute rugs are beautiful but not very useful. They wear about two seasons but as they are cheap you get your money's worth in that time.

The thing in the picture that is most easily and cheaply copied is the book shelves with the seat between. These can be made by the family carpenter and will be found to add charm to almost any room. The result is very pleasing if you have a piece of Japanese embroidery or imitation tapestry that you can tack flat against the wall above the seat. Imitation tapestry is not expensive.

Don't be discouraged if your furniture is not as new or beautiful as someone else's.

Remember that with the proper use of color you can make any room attractive and cheerful and homelike.

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A Swift Current, Saskatchewan farmer writes:—"I came here on my homestead, March, 1906, with about \$1000 worth of horses and machinery, and just \$35 in cash. Today I have 900 acres of wheat, 300 acres of oats, and 50 acres of flax." Not bad for six years, but only an instance of what may be done in Western Canada, in Manitoba, Saskatchewan or Alberta.

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FORAGE FOR PORK PRODUCTION

E. J. Thompson, N. D. A. C.
DECEMBER—EIGHTH YEAR

Economical pork production for our state depends a great deal upon the forage crops furnished the pigs and upon the quality and quantity of grain fed at the same time.

At the station we have tried several crops for a number of years past and find that winter rye furnishes the earliest possible forage crop as it is ready to pasture with the first warm dry days of spring.

The area planted to winter rye needs only be large enough to forage the herd until the middle of June if the summer forage is planted early in May.

For the summer forage we find our brome grass permanent pasture to be fairly good but the plots planted to a mixture of 1 bushel oats, 1 bushel Canadian field peas, 4 lbs. of rape and 2 lbs. of millet have given us better returns and the plot planted to rape alone gave us the best returns of any one of the forage plots. We pastured these plots here on the Station farm at the rate of about 16 pigs per acre. Our plots were exceptionally good and I doubt whether it would be safe to count on more than 12 pigs per acre unless the forage is sown on an exceptionally good piece of ground.

On some of the lighter soils I believe it more safe to count on running 10 pigs to the acre. About the middle of June the pigs can be put on the rape or other forage crop and if the pigs are 10 weeks old and have learned to eat at the trough they will take hold and grow well from the first.

We do not count on the pigs making all their living and storing up a goodly quantity of fat on the forage.

Bargains In Farms

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Use Spare Time

One representative in each county to solicit subscription. Write for the best offer we have ever made.

N. Dak. Farmer, Lisbon, N. D.

We feed our pigs about 4 to 5 pounds of a mixture of feed per hundred pounds live weight, daily, in thick slop mixed at feeding time.

From our experiences in the past we find that when the pigs are started out on a foraged crop as rape or the mixture of rape, oats, peas and millet that a good mixture is about 7 parts of bran and 1 part of a concentrated protein feed, as oil meal, field pea meal or tankage.

In case ground oats or barley is used in place of corn to make up the ration, bran had best be dropped as the bulk of the feed would be more than the pig could make the best use of.

If desired to finish lard hogs off for market in better shape after they have pastured the plots all summer it will be well to have an acre of Gehu or another of the flint varieties of corn to each 15 hogs you have to finish. Turning them in about September 1st weighing 150 pounds the pigs ought to gain 50-60 pounds in September or as long as the foraging is good in the field. Especially is the foraging on the corn paying, we find, when we have some field peas that can be foraged over in connection with the corn.

The feed fed as slop may, after the first month, be dropped to three and one-half to four pounds per hundred pounds, live weight, but I would not change the proportion until August, when the protein concentrate as oil-meal, pea meal or tankage may be dropped out with good gains following.

By planning ahead early enough and

getting the forage crops planted early we may rest assured of cheap, well finished pork as the harvest in November and December.

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GUARANTEE We give a money-back guarantee that everything we sell is exactly as we represent it. Our business has grown to its present huge size by saving money for builders and years of square dealing are behind every statement we make. Write our Bank, The National Bank of Commerce, Seattle, about our reliability. Remember we are not in any trust or association. Send for big 1913 catalog—it's free.	
DOORS This fine front or rear door with large glass, \$2.20. Beautiful Washington fir. Our catalog shows a big assortment of doors at bargain prices from \$1.25 up.	PAINTS 60c gal. for guaranteed, never-fade shingle stain. House, Floor, Wagon and Barn Paints and all painting material at wholesale prices. Free color cards on request.
SASH Sash from 35c up according to size and design. 25,000 styles of sash and millwork, all at mill prices.	HARDWARE This popular "Sheffield" lock is a great bargain at 45c. Thousands of \$3 saving bargains in our immense stock of builders' hardware. Get our big catalog showing prices. It's free.

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Seasonable Receipts

Roast Goose

Dress the fowl twenty-four hours before using, and soak in salt water two hours before cooking. Make a mashed potato dressing, seasoned with onion, butter, pepper and salt. Fill the body of the goose, grease it all over well with butter, and dredge with flour. Place in a pan with a pint of water. Baste well, and cook two hours. Serve with onion gravy and apply sauce.

Roast Duck

Prepare your duck for roasting, and use the following stuffing:

Chop fine and throw into cold water three good-sized onions. Take one large spoonful of sage, two cups of bread crumbs, a piece of butter, the size of a walnut, a little salt and pepper. Add the onions, drained.

Mix well together and stuff the duck. If an ordinary sized duck, bake one hour.

Souse

Thoroughly clean four pigs' feet and the front half of head. Soak over night in salted water. Boil till very tender and the bones will slip out easily. Chop fine. Season to taste with salt, pepper and one-half cup of sharp vinegar. Add a small can of pimento peppers cut in bits. Mould in bar tins. Wrapped in oiled paper. This will keep several weeks in cold weather.

Roast Sparerib

Trim off the rough ends, neatly crack the ribs across the middle, rub with salt and sprinkle with pepper, fold over, stuff with bread dressing, sew up tightly, place in a dripping-pan with a pint of water, baste frequently turning over once so as to bake both sides equally until a rich brown.

Chicken and Macaroni

Butter a baking dish and put in a layer of cooked macaroni then layer of cold chicken, cut rather fine, then a thin layer of tomato sauce well seasoned. Repeat till dish is filled, having macaroni last. Cover with bread crumbs and bits of butter and brown in the oven.

Pork Chops and Fried Apples

Season the chops with salt and pepper and a little powdered sage and sweet marjoram; dip them into a well-beaten egg, then in grated bread crumbs. Fry for twenty minutes, then put them on a hot dish. Have some sour apples cut in slices around the apple, so the core will be in the middle of each piece, about three-fourths of an inch thick; lay them in the skillet the chops were taken from, and fry a nice brown. Turn them carefully so as not to break them, and serve on the chops or in a separate dish.

Sausage

20 pounds of chopped meat,
8 ounces of salt,
2 ounces of pepper,
1 ounce of powdered sage,
1 tablespoon of ginger.

When cool, pack in pans, and first cover it thick with lard, then with paper. When cutting for use, loosen a portion of the paper and press it back again. Keep in a cool, dry place.

To Season Sausage Meat

For fifty pounds of meat use one pound of salt, one quarter of a pound of sage, one tablespoonful of black pepper.

Sugar Cured Hams

To 100 pounds of meat, ten pounds of salt, two pounds sugar, two ounces salt-peter, two ounces black pepper. Mix thoroughly. Rub hams every fourth day until all mixture is used.

Oatmeal Gruel

One quart of water, one tablespoon oatmeal. Boil two hours; strain. Nothing better for nursing mothers.

Cream Candy

Take one pound granulated sugar, one cup water, one-half teaspoon cream tartar, two teaspoons vinegar, one teaspoon vanilla, butter the size of an egg; boil until it hardens when dropped into water. Pour upon a buttered plate and when nearly cold, pull.

Chocolate Fudge

Two cups granulated sugar, one cup each grated chocolate and milk, teaspoon vanilla and butter size of an egg. Cook until a little hardens in cold water, then add vanilla and beat until creamy. Nuts may be added if desired. Pour on a buttered plate and when cool cut in squares.

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